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VOL. I.—9TH YEAR. SYDNEY: SATURDAY, JUNE 3, 1922. No. 22.

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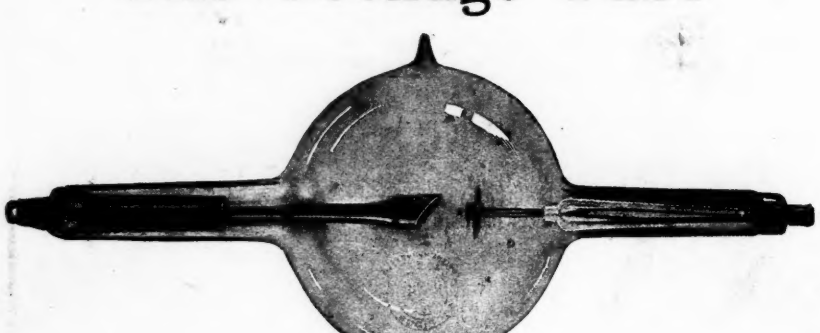

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OPENING REMARKS IN A DISCUSSION ON TUBERCULOSIS.[1]

BY H. W. PALMER, M.B., CH.M. (SYDNEY),
Medical Superintendent, Waterfall Sanatorium, New South Wales.

IN considering the question of tuberculosis, one cannot help feeling great disappointment that, in spite of the tremendous amount of scientific work that has been done, we appear as far off as ever from controlling the disease and preventing its ravages. The historical sketch of this disease, dating from at least 600 B.C., is most interesting and instructive; in fact, with all our technical knowledge we are not so far ahead as regards treatment, for the ancients, both Indian and Greek, were aware of the value of change, fresh air, sunshine, milk diet and knew that recovery took place if early treatment were instituted.

We owe our present extensive knowledge to the many great investigators of the nineteenth century, culminating with Koch's discovery in 1882 of the tubercle bacillus, which gave a scientific explanation of this terrible disease and proved its infectivity. Later, the production of his tuberculins raised great hopes that a specific cure had been found and though they have fallen far short of expectations, they have at least been of some value and have increased our knowledge of the vital processes that take place within the body tissues.

During the intervening forty years, the work of investigation has been phenomenal and an accumulation of scientific facts has been obtained, some apparently proving and some disproving the many theories that have been evolved. As regards tuberculosis, one thing is quite evident; that is that prevention and treatment have in no way kept pace with our knowledge.

How many of us appreciate the fact that nearly 15% of all deaths are due to tuberculosis, that no person or age is immune from its ravages, that the economic loss to the State is not only due to the death-rate, but also to the greater number of tuberculous persons whose usefulness to the community is markedly diminished? To a small Commonwealth like ours, the financial loss must run into millions yearly, without considering the loss of population through death.

Everyone of us considered the importance of controlling the recent influenza pandemic; but do any of us appreciate the fact that tuberculosis is far more deadly and certainly far more expensive economically than influenza will ever be? This being so, should we not seriously consider the means

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on April 28, 1922.

at our disposal to prevent and control this disease and see that the best use is made of these means?

Ætiological Factors.

Apart from the tubercle bacilli, what are the predisposing causes? They can be grouped under social economical, industrial and personal causes.

Social Causes.

The social causes have been at work all down the ages and are largely due to the economical factors. Poverty is responsible for poor and scanty food, badly nourished people, over-crowding, dirty and unsuitable buildings, unhygienic surroundings, with lowered morality, conditions which would be bad enough for parents, but would become intensified in each succeeding generation of children.

Economical Causes.

That nutrition is an important factor is shown by the fact that when wages are raised and surroundings remain the same, there is a fall in the death-rate, higher wages meaning more food. The present marked increase in tuberculosis in Germany and Austria is due to ill-nutrition during the war years.

Industrial Causes.

Irritating occupations, over-work, sedentary work in unhealthy surroundings, injuries, diseases, especially such catarrhal conditions as measles lower the vitality of the tissues and so may allow the tubercle bacilli soil to grow in. In fact, any condition that lowers the healthy metabolism of the body, predisposes to tuberculosis.

Personal Causes.

Environment may also reduce our resistance. When a person is living in a damp, dark, dirty house, without proper ventilation, with little sunlight, with the fear of unemployment ever present, with little hope for the future, the chances of resisting the tubercle bacilli are small.

Statistics show that the greater the poverty, the greater the over-crowding, the poorer and more scanty the food, the greater the increase in the death-rate from tuberculosis. On the other hand, reduce these evils and such death-rate diminishes.

Besides these factors we have the personal element. Now, a child is not born with tuberculosis, as infection *in utero* is extremely rare. Tuberculosis in a child under six months is also rare. However, there is no doubt that children of tuberculous parents have a tuberculous tendency or diathesis. The opposite condition would be inherent immunity. Now, notwithstanding both these conditions, environment probably counts for more. It has been stated that heredity equals one-third and environment two-thirds. A good environment is capable of overcoming tuberculous diathesis, while a sufficiently bad environment can overcome hereditary immunity and allow disease to occur.

Body Resistance.

Now, what immunity is or how it is developed we really do not know. Koch thought his tuberculins could develope immunity and Wright thought he had found out how to estimate it. We know that all proteid irritants bring about certain changes when they enter the body tissues, with the formation of opsonins, antibodies, complements, amboceptors, precipitins and such bodies, but we do not understand how they act and in what relation they stand to body immunization. What we do know is that the blood and tissues have the power when attacked by any irritant to develope forces sufficient to destroy them and only when these forces have been weakened by other causes, will the irritant gain the upper hand. A body with healthy metabolism will resist, while a body whose metabolism is injuriously affected by any debilitating causes, may succumb.

Therefore, anything that tends to build up the healthy tone of the body, will tend to increase resistance. Tuberculin and serum therapy may some day lead to the finding of a specific immunizing agent. Up to the present their success has been very limited and the favourable conclusions drawn regarding them may not be due to their action, but in spite of it. However, the same cannot be said of the more rational methods whereby the healthy metabolism of the body is restored, with marked improvement of the tuberculous condition, so that in any method of treatment these means should always be made free use of.

Now, the tubercle bacillus can gain entrance into the body by almost any route. It can enter through the mucous membrane of the intestinal or respiratory tracts. It can do so without causing any apparent injury or sign, for the tubercle bacillus may act like a fatty globule and cause no more disturbance and enter the lymphatic system as a fatty globule. It may pass to a gland or any tissue and there cause inflammation. Now this inflammation is not disease; it is Nature's method of destroying an irritant. It is only when the bacilli, finding suitable soil, is able to grow there and does so, that a person can be said to be infected. Now, as tubercle bacilli are practically everywhere and as everyone must swallow or inhale thousands of them, we should all be tuberculous if this were not so; in fact, Calmette and von Pirquet say we are and Opie and others state that X-ray examinations support this view. However, we now know the reactions of von Pirquet's tuberculins do not prove any such contentions. What they do show is that children under six months of age do not react, but, as they grow older, a number react, till at the age of puberty almost everyone reacts. The reaction does not mean they have become tuberculous; it only means they have been attacked and this we would expect to happen, seeing that the longer one lives, the more opportunity the bacilli would have to attack.

Von Pirquet's reaction and probably all tuberculin reactions are due to the tissues having already formed antibodies from such natural invasion and these antibodies, coming in contact with the tuberculins, exhibit the sensitiveness shown by the reactions. This must have a most important bearing on tuberculin reactions for diagnostic purposes and surgical interference with enlarged glands. This entry and destruction of bacilli in the tissues may be the means of causing and increasing our im-

munity and some day we may be able to make use of such means to bring about acquired immunity, but at present we appear a long way from such a desired end. The drinking of milk infected with tubercle bacilli may have a considerable bearing on acquired immunity and if such milk were sterilized before drinking, there would be no danger of infection, as proved by pigs fed on milk, where boiling the milk has first been carried out. Boiled milk for tuberculous children is satisfactory, for all children born at Waterfall have done well on it.

Prophylactic Measures.

From what I have said, I wish to emphasize this point that the chief factor in the infection or reinfection of an individual is not so much the presence of the tubercle bacilli as the resisting power of the tissues, or, in other words, such risks depend on our own lowered vitality. Only if this is lowered sufficiently will the virulence and massed attack of the tubercle bacilli become a dominating factor.

Prevention of tuberculosis will depend on how far we can improve the social, economical and general environment of the people, for only after such efforts are successful, can we hope to succeed with the individual. The individual's health must be kept at a high level by each being taught to follow a healthy mode of life, avoiding bad habits, only eating wholesome and nutritious foods, taking proper exercise and spending as much time as possible in fresh air and sunshine. After illnesses of all kinds, especially catarrhal conditions, extra care should be taken.

Notwithstanding what I have already said, it is still necessary to take precautions against the spread of the tubercle bacilli, since, if resistance is low, the bacilli may get the upper hand. On the other hand, there is absolutely no cause for the prevalent phthisiophobia, if our own health and surroundings are good and ordinary precautions are taken. Infection from person to person is probably most often carried by the droplet method. Large masses of sputum immediately fall to the ground and, being sticky, adhere to any object they touch. Now it is a very difficult matter to break such sputum into particles fine enough to float in the air again and by the time that would happen their vitality would be destroyed, unless they were in some dark, damp, dirty corner.

Whatever may be the time tubercle germs can live in the colder climes, in our climate they die, even in winter, in about thirty-six to forty-eight hours in indirect sunlight when in a thin layer. In direct sunlight the process is quicker even.

If people would only take the precaution to cover their mouths when they cough with some waste fabric, there would be little risk from even this cause.

Now how can the social and economic condition of the poorer people be raised?

As I have already said, the social conditions depend very largely on the economic. There is no reason in a country like ours, why there should not be work for all at a living wage. The trouble is the same as all the world over. The rural population has been gravitating to the cities for years and the country districts are becoming depopulated. To allow for work for all, there must be a large return of population to the country, with a large increase in rural production. The prosperity of a State finally depends on the production of primary products and raw materials. This, with the recognition of a living wage, will go far to correct the economic causes and will provide for proper food.

We must look to education finally to raise the social condition of the masses, but if environment is made satisfactory, it will largely influence the ideas of the masses.

Environment can be considerably improved by the proper enforcement of our sanitary and municipal principles, including the condemning of houses unfit for habitation and the common-sense working of the *Building Act*.

By the cheapening of the means of transit with the extensive development of urban living areas and cheaper and more suitable architecture, much could be done. Power to carry all this out is at present in the hands of the authorities.

Essentials for Treatment.

Coming now to treatment of infected individuals, we have every means of dealing with such cases. We have a superabundance of doctors; we have specialists in this disease; we have dispensaries and sanatoria, but we have little after treatment.

Why are we not more successful? We fail because we ourselves are not united and most of us fail to appreciate the seriousness of the disease and have no real faith in the present forms of treatment. Sanatoria fail because they are not sanatoria at all, only homes for consumptives. Under present conditions we are forced to take all types of patients, those with chronic disease and those dying preponderating. Should any person in the early or hopeful stage be admitted, he soon leaves, for he will not stay when he sees all around him people dying of the same disease from which he himself is suffering.

The "chronic" patients supply all the grumblers. As they cannot improve on account of their condition, they blame everyone but themselves because they do not recover and create considerable discontent where contentment is so essential to success.

If sanatoria are only expected to fulfil what they are capable of doing, they will do it most successfully. The functions of sanatoria are educational and curative, but they are only suitable for tuberculosis in its early and favourable stage. If any treatment will cure a consumptive, sanatorium treatment will. Early diagnosis is essential and, if carried out successfully, very few patients would go wrong. By having only patients who can be cured together, an atmosphere of faith and hope in sanatorium methods prevail and new patients, coming into this atmosphere and seeing how quickly others improve, immediately begin to recover. They become most anxious to carry out every detail of treatment and when they leave the sanatoria, they become teachers of fresh air and good living to all with whom they come in contact.

Early Diagnosis.

Now, how can we improve our methods so as to diagnose tuberculosis early? Only by paying special attention to the patients we see and becoming

familiar with the most important symptoms. As tubercle bacilli do not generally appear till later in the disease, we cannot be absolutely certain it is tuberculous. However, we must not wait till then and we have other means that should guide us. The most convincing are hæmoptysis and pleurisy, for, though they can both occur in other conditions, the other causes can be easily eliminated. With the absence of all these signs we must be guided by the whole history and aspect of the patient. Family history is important, but personal history is more so.

The onset is generally very gradual; the symptoms at first are only very slight and often overlooked. Generally it begins with languor, weariness and a feeling of being tired without cause. This usually persists, in spite of rest. Then appetite becomes uncertain, fault is found with food, anorexia increases, indigestion appears and rheumatic pains in bones, joints and muscles, with loss of strength and muscular tone, supervene. Then there is generally loss of weight and slight cough in the morning. A rise of temperature to 37.2° C. (99° F.) persistently at night is extremely suspicious and, if alternating with a sub-normal morning temperature, it is almost conclusive with the other signs. As the disease advances these symptoms become intensified.

If with a number of these symptoms the shoulder drops on the affected side, with flattening of the shoulder, hollowing of the supra-clavicular fossa and slight retardation and diminished expansion of the affected side, tuberculosis is likely. There will be very slight variations between the two sides, but they must be looked for and percussion notes, vocal resonance and fremitus closely compared. Auscultation is more difficult, but gives important information. The signs are due to the very slight amount of injury and alteration in the tissues. The early auscultatory signs are described as rough vesicular or granular and are probably due to the air passing over little tubercles situated at the entrance to the air vesicles and occur mainly in inspiration.

Later on we get feeble breathing, due to increased inflammation, then interrupted breathing, which can, of course, occur in other conditions. However, if it is localized, especially to a small spot near the apices, it is strongly suggestive. Later comes harsh respiration, with increase of expiration. In muscular individuals care must be taken not to mistake the muscle sounds for this.

None of the signs above is conclusive, but, by considering the whole facts as presented, a diagnosis ought to be possible.

Tuberculin has often been used for diagnostic purposes, but great care must be exercised in giving it and in drawing conclusions. With Koch's tuberculin there must be more than a general reaction and rise of temperature; there must be alteration of the adventitious sounds at the seat of infection; that is, there must be a definite focal reaction. Some authorities hold that there must be a reaction at the point of injection, but the same objection holds with these as with von Pirquet's. Complement fixation with Besredka's antigen is said to give specific results and when more fully tested may prove valuable.

X-rays may give important information, but the results will depend largely on the extent of the damage done.

Treatment.

Passing from early diagnosis, I now come to treatment, which chiefly depends on building up the strength or resistance of the patient. Sanatoria offer the best inducement, but they are only good for patients in the early stages. They are also useful for patients in the later stages; but such patients should be treated in separate institutions.

Sanatoria depend on fresh air, liberal diet, sunshine, rest and a proper use of exercise. Rest or exercise are prescribed according to the activity of the disease; the indications are the physical signs, the temperature and the pulse-rate. If the temperature and pulse-rate are high, rest in bed is essential. A temperature above 37.2° C. (99° F.) at night will generally require rest in bed. This is generally sufficient to bring the temperature and pulse down and to reduce any active physical signs. The time required may run to three or six weeks or even much longer. However, if rest for a continued period, say, six weeks, does not reduce the unfavourable signs, one will have to consider allowing the patient to sit up. One would then be guided by the general condition.

Exercise should not be allowed in the early stages till the temperature is stationary and the general condition is good. At first a very little walking is allowed; it is gradually increased as the patient developes strength. Exercise is controlled by the rise in temperature and the time the temperature takes to return to normal, the latter being the most important factor.

Sanatorium methods can be carried out at home if the surroundings are favourable, but open-air treatment at home has not the educational effect, nor has it the association or atmosphere so necessary, as a sanatorium has.

If it is considered advisable to use serum therapy, it should be used with the above methods. Tuberculin and serum therapy may be serviceable for dispensary work, whereby something has to be done for the patient, whose environment can so seldom be altered at once, but even in these cases, great care and supervision should be exercised.

Drugs are extremely valuable for controlling irritating cough and to allow easy expectoration. Otherwise drugs are unnecessary in the early stage, but are very useful in the later stages. Creosote and its derivatives will sometimes loosen and diminish the phlegm, but it often destroys the digestion. However, it is most useful for offensive sputum. Iron has proved more useful as a tonic than arsenic or quinine. Dover's powders are probably the most useful of all preparations, preventing colds and relapses; but all drugs at times are useful. In the later stages codeine, heroin and morphine may be needed. However, very small doses of these drugs will be found sufficient.

Butter, cream and milk supply all the fats required and it is only when these cannot be taken that there is any need for cod-liver oil preparations.

Now, if only patients with early disease be admitted to beds set apart for them, how are we going to prevent others occupying them? This could be done by having a central authority, which would control and classify the admission of all patients to beds set apart for consumptives. By doing this a sufficient number of beds would become available. This authority could have referred to it all patients with doubtful signs for diagnosis. It could receive and deal with all tuberculosis notifications and control nurses trained like the tuberculosis nurses in Baltimore, United States of America. These nurses would visit, instruct and generally assist affected persons in their homes. The central authority could coordinate and organize all the different agencies working to combat tuberculosis.

Obviously, such work as this falls under the jurisdiction of the Ministry of Public Health, for, not only is this question one of public health, but the Ministry of Public Health already controls the majority of the existing agencies. The Ministry controls partly or wholly the large general hospitals, the country hospitals, hospitals for the infirm, sanatoria, health inspectors, nurses and notifications. Where not wholly controlled by the Ministry of Public Health, these agencies are largely dependent for financial support, so any little assistance needed for these purposes should be easily obtained. The Ministry also has access to the public funds for the extension of necessary undertakings and can deal with the political aspects. No other authority would have such claim to control and, as very little interference with existing rights is intended, there should be little objection to such a scheme.

The Tuberculosis Board would be composed of medical men well versed in all aspects of tuberculosis and could work under the Ministry of Public Health. It would deal with notification and what notification stands for. It would admit to all beds set apart for tuberculosis; it would classify and record all histories, would deal with the educational questions and all matters concerning this disease.

Notification would require a short report of each case and a statement whether the doctor intended to continue the treatment or if he wished the Board to provide it. If the doctor decided to continue, then nothing more would be done by the Board, but if he wished the Board to undertake treatment, the Board would do so. By doing so, the Board does the doctor a service and helps the patient by immediately providing him with the most suitable treatment.

By controlling the admission to all beds set apart for tuberculous patients, only the Queen Victoria Homes would be affected, but as they would get the pick of all patients, which is what they have been wanting for years, they should not object.

The dispensaries would be increased and assisted.

The hospitals would be made use of as at present, but more use would be made of them for diagnostic purposes and training.

The importance of a fuller training in tuberculosis for our medical students is so great that, considering the seriousness and extent of this disease and the frequency with which they will be called on to deal with its problems, a special course at the University seems a necessity.

After-Treatment.

At present there is very little after-treatment. When patients are fit to return to work, no suitable work is available. Many are most willing to take up country life, provided they can have their families with them, and earn a living. Farm colonies and village settlements offer many attractions. In such conditions, with proper supervision, the consumptive can regulate his hours of work, only working when fit, can have the best of food for himself and his family and can live and work in the fresh air. These conditions are even more important for his children, for only under such conditions can they hope to overcome their tuberculous tendencies.

However, it is not absolutely necessary for people to change their mode of life or occupations when recovered, provided they can live under sanatorium conditions at home and can regulate their work to their physical condition. The benefits of a proper country life in these respects are very great and, if such colonies were successful, they would be examples, inducing many of the town population to return to the country.

The cost of carrying out such a scheme is not beyond the powers of the present Government.

As leaders of public opinion, the medical profession as a whole must see that this terrible disease is more seriously dealt with.

AN INAUGURAL ADDRESS.[1]

By C. P. B. CLUBBE, M.R.C.S. (ENG.), L.R.C.P. (LOND.),
Consulting Surgeon, Royal Alexandra Hospital for Children, Camperdown; Consulting Surgeon, Royal Prince Alfred Hospital, Sydney.

To begin with, I must thank you for the honour you have done me in asking me to preside over this new Section of our Branch.

A section for diseases of children was first instituted at the Annual Meeting of the Association, held in Liverpool in 1883. It was presided over by Dr. S. Gee, who gave a very learned address: "A Survey of the Literature of the Diseases of Children." At the end he said:

> I wish to bring before you one truth, which this sketch makes very clear. Looking over the names of the men whom we have celebrated, the men who have made our knowledge what it is, I do not find one who could be called a specialist in children's diseases; but the multitude are mad after specialties. No wonder, for we are the descendants of those who in their sickness worshipped fetishes and charms, or sought after star-gazers and the touch of kings. Our children will deem us to be in other respect no less simple. Besides, it is a true saying that "The world suspects a man who can do two things well." As the poet says:
>
> "One science only will one genius fit
> So vast is art, so narrow human wit."

But art is not yet so vast, nor human wit so narrow that the diseases of children need be made a specialty: and I

[1] Delivered at the first meeting of the Section of Pædiatrics of the New South Wales Branch of the British Medical Association on April 21, 1922.

believe that none of us are specialists in the popular and evil sense of the word. For my own part, if I may speak so much of myself, being a physician to a hospital for children and to a much greater hospital for people of all ages, I can see that my knowledge of children's diseases would be much poorer and meaner than it is, were it not for the larger experience I gain at St. Bartholomew's. I wish that the governors of the general hospitals would make more provision for sick children and then the need for special children's hospitals would pass away.

After such a pronouncement one cannot be surprised to find that no further meeting of this Section took place for several years.

In 1888 at the Annual Meeting held at Glasgow the Section was revived and Dr. Cheadle, who presided, gave an address on the present position of study of diseases of children in relation to medical education. During his address he said that he agreed with the concluding remarks of his distinguished predecessor and he went on to say:

Although I do not advocate the establishment of children's diseases as a distinct specialty, I would insist with all earnestness that, although a specialty may be unnecessary, a special study of diseases of children is essential to the medical student.

The next address was given by Dr. James Goodhart in this Section at Bournemouth, in 1891. He chose as the subject for his address: "The Child is the Father of the Man." After a very long address he concluded thus:

I have, however, done enough to carry out my purpose, which was to suggest that those who devote themselves to the study of the diseases of children will make themselves more useful to mankind and make their study more interesting and instructive to themselves if they come to their work, not as specialists, who are men of single eye, but as those who are accustomed to look all round a case before going special: for if we except the particular cunning of the hand in the manipulative treatment and management of disease there is no organ with which, at any rate, physicians are concerned, that is not constitutional. There is no part, for instance, more constitutional than the eye, none more so than the nose, none more so than the larynx, none more so, if you like, than the big toe. It is the old story indeed that the eye cannot say to the hand, I have no need of thee, and local disease—we may well remind ourselves of it at the present day—is a resultant of innumerable physiological forces which require in some measure to be gauged, before it can be thoroughly understood. It is not enough to know that there is a *Bacillus tuberculosis* and that its presence works certain destructive processes in our tissues. We want to know why it affects some people, some families and not others and it is conceivable at any rate that the cure or prevention of the ill-effects may, after all, come by understanding or unravelling the meaning of individual proclivity and not by destroying or starving the invading germ and this is never more true or more obvious than in children.

If I might be inclined to qualify what I have said, even ever so little as regards adult life and perhaps more so during the period of its decline than for any other, I believe it to be absolute for the periods of growth and development and I shall venture to say that in the diseases of children there is nothing that gives the smallest countenance to specialism; they are rather to be considered the grammar of disease.

When looking over the addresses given more than thirty years ago by these distinguished men, whose fame and reputation still survive, we cannot help being struck by the fact that, while they all agree that it is quite unnecessary that children's diseases should be a specialty, they urge a special study of diseases of children by all medical students. We can see that, realizing the great importance of the matter, they endeavoured to persuade both teaching and examining bodies to make diseases of children a compulsory subject, as the only certain way of bringing about a reform. It is sad to think how very little we have advanced in this direction in the intervening years.

From 1891 to 1914 the Section for Diseases of Children at the Annual Meetings of the British Medical Association was only omitted on three occasions, *viz.*, 1897, 1904 and 1905.

During the war there were no regular Annual Meetings of the British Medical Association. A Section for Diseases of Children in conjunction wth orthopædics was held at the Annual Meeting in 1921.

In establishing this Section in connexion with our Branch of the British Medical Association, our aim is to encourage discussions on diseases peculiar to children. We hope the membership of this Section will not be entirely confined to those who happen to be on the staff or to be connected with hospitals for children. This Section should be most useful to all young general practitioners, because at our meetings they will be able to bring forward and discuss problems they are frequently confronted with in their everyday practice among children.

To make this Section interesting and of practical value we hope to get papers on subjects of general interest that lend themselves to discussion and also to have clinical afternoons at hospitals, where the cases can be discussed after the patients have been shown.

The young general practitioner (unless he has had the good fortune to have spent a certain time as resident at a children's hospital) seems very often to get into difficulties when dealing with children. He does not know how to examine them nor how to treat them. I have been told by clinic nurses that they frequently get children brought to them with diarrhœa who have been taken to a doctor a few days before. The doctor had prescribed a bismuth mixture for the diarrhœa, but he had not given the mother any directions whatever as to feeding. As these children are not likely to improve under such conditions, they naturaly drift to the nearest clinic.

Some men who lose their patients in this way, are inclined to blame the clinic; surely they are unreasonable.

The advantage of some knowledge of diseases of children to every young practitioner cannot be overestimated. In many general practices quite half of the work will be among infants and children.

Dr. Charles West used to say that the man who starts for the first time to study diseases of children, is like a traveller in a foreign country; he hears a strange language he does not understand.

A step in the right direction was taken in 1919, when a conference was held in London by those interested in diseases of children, in conjunction with several physicians belonging to the pædiatric division of medical schools in the Dominions and United States of America.

The conference was informed that many universities in the United States had departments of ortho-

pædics and that attendance on lectures and clinical teaching was compulsory.

Dr. Ramsay said that in the medical school of the University of Minnesota there was a separate department of pædiatrics, with a whole-time professor, an assistant professor and its own staff of clinical assistants. In establishing a separate department Minnesota had followed the lead of Harvard; he considered that in a medical school there should be intensive teaching in pædiatrics, which was a fundamental subject and should be given in close co-operation with the obstetrician.

The conference adopted a resolution with regard to the education of medical students:

(1) That every medical student preparing for a registrable qualification shall receive adequate training in subjects of infancy and childhood in health and disease. That attendance in a department where instruction is given in these subjects should be compulsory and that some special part of the final examination in medicine should be devoted to these subjects.

(2) That as far as practicable this study shall follow upon and be coordinated with a satisfactory course in obstetrics and gynæcology.

It is obvious that, until some knowledge of disease peculiar to children is made compulsory, the University medical student will give it but scant attention, because at the present time he is nearly overwhelmed with the subjects about which he must know something in order to satisfy the examiners.

In a recent address Dr. W. Mayo said: "So tremendous has been the recent advance of medicine that no one man can understand more than a small fraction of it."

If this is true and I suppose the majority accept it, what bearing has it upon the medical curriculum and upon the examination that it is necessary for a student to pass before he can graduate and qualify for registration as a medical practitioner?

If it is impossible in a lifetime for anyone to keep pace with the recent advances in medicine and surgery in its many branches, are we not sometimes expecting too much of the medical student at his final examination?

It seems to me inevitable that as time goes on many of the special subjects will have to be eliminated and the student for a pass will have to show that he has a working knowledge of medicine and surgery, a thorough grounding in midwifery and also show that he knows something of diseases of children. Let the other subjects, mental disease, neurology, gynæcology, diseases of the eye, skin, nose and throat, public health, medical jurisprudence, urology, radiology, etc., be acquired later on.

Men who intend to specialize in one subject, will have no difficulty. They can begin while they are resident medical officers at general hospitals and afterwards get attached to special hospitals. With the man who is to start as a general practitioner, the difficulties will be greater. It is essential that he must have some knowledge of many of these special subjects and all this knowledge he must acquire during the time he is a resident at a hospital, but we know it is not always possible to put a resident medical officer through all the special departments during his residency.

After a man has taken his degree and has been registered, he becomes a legally qualified medical man. Fortunately, most men realize that, although qualified, they are not fit to practise and so they do their best to obtain resident positions at hospitals. I think the time will come and I believe it does obtain in some universities when men, even after passing their final examinations, are not granted their medical degree and so cannot become legally qualified until they have spent a certain time as resident medical officers at some recognized hospital.

One of the duties of a right-minded medical man is sometimes to try to protect his patients from themselves and from the foolish advice of a multitude of friends. We must remember that the great mass of people and even some educated people are just as credulous in matters medical as those in the Middle Ages. Always seeking something new, they readily become the dupes of qualified and unqualified quacks. All of us who have lived long enough, have witnessed the rise and fall of certain fashions in medicine. The rapidity with which a fad is sometimes adopted is extraordinary; in this respect the medical profession resembles a flock of sheep.

The Tonsil.

I wish to speak to you to-night about an operation that everyone thinks he is qualified to perform and that is performed far too frequently and without sufficient discrimination on young children. I mean the removal of tonsils. Many men have been overzealous in this matter now for many years.

In 1912 Dr. John Mackenzie, of Baltimore, wrote a paper on this subject which attracted much attention at the time. The title of the paper was the "Massacre of the Tonsil." It appeared in the *Maryland Medical Journal* of September, 1912. I have not seen the paper, but I give the abstract that appeared in the *Journal of Laryngology* of December, 1912:

The author has been induced to write the paper as a formal protest against the indiscriminate and wholesale removal of tonsils, which he says is the chief and most glaring abuse to the laryngology of the day. Furthermore, he considers this protest is in the interest of public health and public safety. He agrees that there are hosts of conditions that call for more or less complete destruction of the tonsils. His contention is that in the selection of cases for operation one should be guided by a sane and safe conservatism and common sense.

Mackenzie speaks of the tonsil question as never having been in the history of medicine such a lust for operation. He speaks of it not simply as a surgical thirst, but as a mania, a madness, an obsession. He considers the question of operation on the tonsil from the following standpoints:

(1) The functions of the tonsils in the present state of our knowledge are unknown.

(2) Whatever its functions might be—the production of leucocytes is undoubtedly one of them—the tonsil is not, as generally taught and believed, a lymphatic gland. . . .

(3) The rôle of the tonsils as portals for infection, like all other new doctrines in medicine, has been greatly exaggerated. Too little attention is paid to the other regions in the upper respiratory tract in considering the avenues of infection.

(4) The hypertrophied lymphatic tissue on the vault of the pharynx (adenoids) does harm chiefly through obstruction. Restore normal respiration in the child and in a

large number of cases the tonsils will take care of themselves.

(5) The mere size of the tonsil is of itself no indication for removal, except it be large enough or diseased sufficiently to interfere with respiration, speech or deglutition, in which case it—or a sufficient portion—should be taken away without delay.

The editor of the *Journal of Laryngology*, in an article in which he favourably discusses the paper, says:

A temperate consideration of the facts, therefore, cannot fail to enlist the sympathies of all, save the fanatical tonsillectomists, on Dr. Mackenzie's side in his crusade and although the indications he gives for operation may seem to err on the side of caution, nevertheless even an extreme caution boldly expressed is welcome if it succeeds in instilling a little doubt into the closed and over-confident mind.

About two years ago Professor K. H. Digby published a little book entitled "Immunity in Health." The reviewer of the book in *The British Medical Journal* of November 1, 1919, says: "It is an essay on the function of the tonsils and other sub-epithelial lymphatic glands in the bodily economy." He argues that the lymphatic tissue of the tonsils and appendix, for example, is of functional importance to the body and gives good reasons for rejecting the short-sighted view that these organs are vestigial, functionless and therefore worthy only of excision.

The arguments he advances are well worth our consideration and, as the book is not procurable here, I think I am justified in giving you somewhat lengthy extracts from it. In the introduction he says:

Tonsils, adenoids and the vermiform appendix are still commonly regarded as useless, even dangerous, relics of a past usefulness. But the investigations recorded in the following pages point in quite another direction and appear to support the view that these structures (together with the *noduli lymphatici solitarii* and *aggregati*) should be grouped together into one class of "sub-epithelial lymphatic glands"; that they constitute important anti-bacterial weapons and share a great and valuable function in the preservation of health. Evidence will be adduced to show that these sub-epithelial lymphatic glands are not so much local defences to strengthen weak spots, as organs for the development of general systematic immunity.

It is during the early years of childhood that the sub-epithelial lymphoid tissue attains its maximum development. . . . The time of greatest activity of these glands corresponds with the period during which the individual is securing immunity against the exanthemata and other infections and it seems we must correlate those two phenomena, the acquirement of immunity with the activity of the sub-epithelial lymphatic glands. At or about the time of puberty a diminution takes place in the size of these glands and in later years, when presumably a high degree of immunity has been obtained, they have usually undergone a partial atrophy.

It is common physiological knowledge that lymphocytes leave the sub-epithelial lymphatic glands passing between the epithelial cells. . . .

Ruffer examined the mucus from the surface of human tonsils in normal persons and found many leucocytes full of microbes. Similar observations have been made before and since that time.

It has also been repeatedly noticed that in section of epithelium over lymphoid collections small glandular lymphocytes are to be seen between the epithelial cells. Glandular lymphocytes frequently contain bacteria. May not glandular lymphocytes wander to the surface, surround bacteria and return with their prey to the retiform tissue? A strong piece of evidence in favour of this theory is to be found in the fact that almost all (if not quite all) the bacteria seen in the epithelial layer lie within glandular lymphocytes.

Therapeutic Bearing.—A general acceptance of the theory of the immunizing function of the sub-epithelial lymphatic glands would probably lead to a more conservative surgery.

With regard to the practical bearing on surgery, it may be declared at the outset that the excision of the tonsils and the appendix can never be abandoned. There has, however, at times been a tendency to remove faucial tonsils solely because the naso-pharyngeal tonsil (adenoids) is being curetted or to remove the appendix as a routine measure in any laparotomy for other cause.

The ruthless advocates of the indiscriminate massacre of sub-epithelial glands would urge with perfect truth that no satisfactory proof has ever been presented showing disability following removal. But the question has never been scientifically studied. What is required is to take many thousands of healthy children living under similar conditions, in half of whom the healthy tonsils had been enucleated and the adenoids completely cut off within the first two or three years of life and then compare the susceptibility of the two groups to infectious diseases during the remaining years of childhood. The statistical and scientific difficulties would be immense, but until some such investigation has been made one must conclude that the question of disabilities following removal is quite unproven either way. Isolated cases of infective diseases following tonsillectomy have been recorded. Their occurrence may well have been accidental, but it must not be assumed too readily that removal of the tonsils and adenoids lessens the incidence of infectious disease. Indeed, the converse may be the case. A very careful investigation of the after histories of cases submitted to this operation at the Johns Hopkins Hospital has been recorded by Crowe, Watkins and Rotholtz. They say: "Organisms probably pass through the mucous membrane of the nose, naso-pharynx and pharynx more frequently than is generally supposed. We have on several occasions seen in patients whose tonsils and adenoids had been thoroughly removed an enlargement of the glands of the neck, a return of arthritic symptoms, repeated attacks of rheumatic fever and especially a recurrence of chorea after a mild coryza or pharyngitis."

Quite recently Zahorsky published a valuable paper on the late results of the removal of tonsils and adenoids of one hundred and fifty children, aged eight to twelve years, who were under clinical observation in private practice from six months to five years. After the operation: deficient nasal respiration, thirty-eight cases; acute otitis media, twenty-one; bronchitis, seventy-one; pneumonia, fifteen; rheumatic fever, eleven; endocarditis, seven; chorea, six; diphtheria, three; and enlarged cervical glands, fifteen cases.

Zahorsky concludes: "The clinical impression that tonsillectomy increases the tendency to bronchial and pulmonary infection is corroborated by these figures, although they are not conclusive, as no figures are available as to the usual incidence of broncho-pneumonia in children. That the attack of acute tonsillitis renders the child temporarily immune to a variety of dangerous infections seems probable. . . . My observation shows that the child beginning his school life without tonsils is in greater danger of acute diseases than one who has still his tonsils."

It may be here emphasized that it would be difficult to show statistically that the loss of a finger was disadvantageous; yet we can see the mechanism of digital efficiency so clearly that we can have no doubt as to the reality of the disadvantage. Granted the mechanism and utility of the sub-epithelial lymphatic glands advocated here, we can have little doubt as to the disadvantages entailed by their loss.

However, the body has such large powers of compensation that local losses can usually be made good. It is probable that adjacent sub-epithelial lymphatic glands hypertrophy can largely replace the organs removed. The disadvantage of these glands in the body is their proneness to more or less successful bacterial assaults. Besides becoming the site of a local disease, they may become the portals of entry of general disease. Sometimes, while the glands do not succumb they are provoked to such hyper-

plasia as to cause mechanical disabilities, such as nasal obstruction.

The advantage of these glands is—so it is maintained—that they are constantly sampling adjacent bacteria and immunizing the body against their invasion. Considering that they are constantly engulfing bacteria it is seen how relatively infrequent is their defeat. An occasional attack of tonsillitis . . . may well be a cheap ransom to pay for immunity from general infections of far greater frequency and severity.

That the balance of the action of these sub-epithelial lymphatic glands is advantageous is indicated by their occurrence in the height of their development in the later, more developed and more successful types of animals.

That the sub-epithelial lymphatic glands are a risk to their owners from the effects of acute attacks of inflammation can hardly be doubted. If their possession involved no counter-balancing benefits, all variations in the direction of their suppression would have a strong bias in their favour in the struggle for existence and these organs would tend to disappear in the race. In the words of Professor Keith: "We know from fossil remains that the great anthropoids are of extreme geological antiquity. Were their appendices (identical in structure with the human appendix) injurious or vestigial structures, there has been ample time to accomplish their complete suppression. Moreover, any organ that ceases to be of value degenerates. This principle of degeneration is perhaps imperfectly realized."

Résumé of the Hypothesis.—The hypothesis is that the sub-epithelial collection of lymphoid tissue plays an important function in immunizing the body against pathogenic bacteria in proximity to the tissues. These organs secure this general immunity by ingesting the bacteria upon or near the surface of the covering epithelium. The mechanism of ingestion may be called phagotaxis—the lymphocytes leaving the gland tissue wander to the surface of the epithelium or beyond . . . engulf bacteria and return with them into the parenchyme of the gland, where the bacteria are slowly overcome or sometimes passed on to a further relay of lymphatic glands for destruction or even by the blood to the spleen and bone marrow. Bacteria are being constantly invited into places that are nearly always impregnable. The bacteria are not only overcome, but a great number of lymphocytes capable from experience—if one may fancifully so put it—of dealing with that kind of bacterium are scattered through the blood stream ready to resist invasion elsewhere.

The sub-epithelial lymphatic glands are not only breeding grounds, but also training schools for lymphocytes.

Such, then, is Professor Digby's theory. The great importance of the subject and the fact that the book cannot be obtained in Sydney must be my excuse for quoting from it at such length.

The book was favourably reviewed in *The British Medical Journal* of November 1, 1919. At the end the reviewer said: "The book is well worthy of the attention of all practitioners, but especially specialists who deal perhaps too freely at times with the structures mainly under consideration."

For a long time I have felt that tonsils and adenoids were often removed from some children without a just and sufficient reason. In matters of this sort many of us are content to float along with the stream. We soothe our consciences with "What everybody does, must be right"; and we do not think for ourselves. When we realize that tonsils and adenoids in children have a very definite function, have been placed there by Nature for a specific purpose, we shall not be so ready to recommend their removal without some very good reason. Mere enlargement is no reason for their removal. Some of you may remember—because it was reported in the medical press at the time—that when school children were first systematically inspected in the schools in the United States of America, the hospitals in a large town, I think it was Philadelphia, were for a time overwhelmed with these children sent to them from the schools for removal of tonsils. The congestion was so great that large numbers were sent away and told to come again in three months. At the end of that time, when they came up for treatment, it was found that the operation was not then necessary (I think) in 70%.

It would be very interesting and also instructive if Dr. Harvey Sutton were to get his staff to set about getting statistics on this subject. A very large number of the school children in this State have had their tonsils removed. It would be interesting to find out the general state of health and the susceptibility to infectious diseases of the children who have had their tonsils removed in early life. I know it would entail a large amount of work and some considerable time must elapse before any conclusion could be drawn from such statistics.

Those men who argue for the removal of enlarged tonsils and adenoids from all children, whether they are giving rise to symptoms or not and there are such men, argue first that these structures are quite useless and second that no harm has even been known to follow their removal. Neither argument will hold water. Men who are entitled to speak with authority on this subject, now say without hesitation that the tonsil has a function. And it is not true to say that no harm ever comes from their removal. In the case of some very sickly children, the story told is that they have never been well since the tonsils were removed. Of course, this is exceptional, but I have come across such cases.

I do not wish to be misunderstood. I do not say that tonsils and adenoids should never be removed. Far from it. I know, of course, that it is necessary and always will be necessary to remove tonsils and adenoids from certain children. This, however, is not the time nor the place to discuss those cases in which operation must be performed, those cases that should be left alone and the doubtful borderland cases.

In dealing with this matter in the way I have done this evening I wish to arrest your attention. I want to make some of you realize that tonsils in children have a special function and for this reason they should not be removed unless you are sure they are doing harm to the child.

It has been suggested that I should mention some subjects on which papers might be written that would be suitable for discussion in this Section.

Infantile Diarrhœa.

Infantile diarrhœa is a subject on which much could be written and is one that should provoke much discussion.

I am not thinking so much of the acute fulminating gastro-enteritis so often met with in the hot months (from which we have been singularly free this season), but the diarrhœas that are met with both in summer and winter, more especially among bottle-fed babies and very often due to improper

feeding. This would naturally lead on to the subject of

Infant Feeding.

I do not know if anybody will be bold enough to write a paper and lay down the law on this matter in Sydney, where such widely divergent views on this subject are held by those in authority. We should always bear in mind that diarrhœa in a child is a condition which does not necessarily originate in the gastro-intestinal tract, but may be due to inflammatory processes set up by bacterial invasion in other parts of the body.

Any diarrhœa coming on in a breast-fed child or in a child that you know is being carefully and properly fed artifically, ought to make you look around and be on the alert to discover the cause.

Tonsillitis, naso-pharyngitis, middle ear trouble, *Bacillus coli communis* infection of urine are conditions that may exist in children without at first causing clear local symptoms. The symptoms are fever, restlessness, vomiting and diarrhœa and we must be careful not to put the vomiting and diarrhœa down to gastro-enteritis and overlook the primary cause.

Tuberculosis of Bone.

In regard to the diagnosis and treatment of bone tuberculosis in the early stages, some are inclined to lean too much on the X-ray picture, quite forgetting that in the early stages of tuberculous bone and joint lesions, the findings are often negative. When the radiographer is able to say definitely "This skiagram indicates a tuberculous joint lesion," the mischief is done and the joint is probably irretrievably damaged.

The signs and symptoms of early tuberculous spine and hip disease, when once learnt, are quite simple and should not be difficult for anyone to master.

When once the diagnosis is made, the line of treatment is quite clear. But this is where so many men go wrong. They will not be firm about the long periods of rest that are absolutely necessary. They prescribe six weeks' (sometimes only three weeks') rest. At the end of that time the child is allowed to get about again, only to relapse in a very short time. It is really tragic, seeing what is involved: but even then men will not take warning and another short period of rest is ordered, after which the symptoms recur in a very short time.

Each time relapse takes place the disease extends. We frequently see in children with advanced tuberculous hip disease, the joint, as a joint, hopelessly damaged. When the history is taken, it comes out that the condition was recognized quite early, many months ago, but only short periods of rest had been ordered and at each relapse the condition seemed to get worse. A child allowed to get into such a condition will now have to be laid up for a year or more and at the end of that time is probably doomed to be a cripple for life; whereas, if the right treatment had been insisted upon at the beginning, there was a good chance of recovery without lameness.

Septic Bone Affections.

Acute septic bone trouble is another subject it would be useful to discuss.

Warbasse, in "Surgical Treatment," says: "There is no single disease which is a greater reproach to the medical profession."

Why is it these cases are so often missed and are diagnosed as rheumatism, rheumatic fever, typhoid fever with delirium, etc., and only when it is too late does it dawn on the practitioner that he is confronted with acute septic bone trouble? For many years the importance of recognizing this trouble at the very onset has been dinned into the ears of students by lecturers all over the world and it is emphasized in all the text-books and yet, when such a case presents itself to the general practitioner, he more often than not fails to recognize it.

The Milk Problem.

Two other subjects of wider and more general interest have been suggested as subjects that might be discussed in this Section and they are the milk problem for one and the right method of dealing with the mentally deficient for the other.

One of the great difficulties in dealing with the milk problem is to harmonize the hygienic with the economic conditions involved. At present the milk we get in Sydney is often extremely filthy. It is probably not worse than in any other large town. Everybody who has taken the trouble to go into this matter, knows that this is true. How can we say the milk supply of Sydney is good, when one of the largest milk purveyors of Sydney habitually supply their customers with milk containing many million organisms per cubic centimetre (sometimes twenty millions). These are facts that you cannot get away from. The milk is dirty because ordinary precautions are not taken to keep it clean. While dirty milk can be sold with impunity, we must expect dirty milk. Directly you confiscate all milk containing more than a certain number of organisms per cubic centimetre, a wonderful change will come over the scene. The gross abuses with vanish.

Dr. Stenhouse Williams and his co-workers demonstrated that, on an average farm with no special advantages, if the milker is intelligent and understands his business and is provided with light, water and steam, it is possible to produce quite clean milk, *i.e.*, milk with only 10,000 germs per cubic centimetre. To bring such milk to Sydney from the country, cold storage must be provided by the railway authorities. Such pure, fresh, clean milk is what we should aim at and, if it could be procured, it would no doubt be used by everybody for baby feeding.

What effect the consumption of germ-laden milk has on the health of children is a matter for discussion.

But I do not think the milk supply of this town, bad though it is, much influences the infant mortality rate, because in the artificially-fed baby dried milks are now almost invariably used and Dr. Lane Claypon has, I think, proved that the use of boiled milk and dried milk had no deleterious effect on the growth of the infant.

The Mentally Deficient.

There seem to be no statistics available from which we can gather information as to the exact number of mentally deficient persons in this State, but we have reason to believe that the numbers are increasing here as in other parts of the world and this makes the question one on which the medical community should speak with no uncertain voice in order to educate public opinion.

The last report of the Inspector-General of Mental Hospitals, under the heading of "Mental Defectives," says:

> The control of mental defectives has not yet been made the subject of legislation in this State, but steps to this end are now being taken.

When at last laws are made, let us hope that they will be effective and practical.

Tredgold, at the end of his book on "Mental Deficiency," says:

> So long as we are content to raise no voice against the marriage of the diseased, the degenerate, the criminal and the pauper and are willing to educate, feed and clothe and ultimately pension as many offspring as these persons see fit to produce; so long as legislation is permitted a free hand in doing everything calculated to diminish parental and social responsibility and to strike at the very root of any incentive to labour; so long as our law makers and would-be philanthropists are blind to the folly of transferring the burdens and penalties inevitably following carelessness, improvidence, indifference, drunkenness and unlimited selfishness from the shoulders of those upon whom they should rightly fall to the careful, provident and industrious members of the State; then so long will these classes (and these qualities) continue to be perpetuated and their numerical ascendance is simply a question of time.

Professor Welsh, writing on "Mental Deficiency" in conjunction with Sir Charles Mackellar, says:

> The feeble-minded, who are naturally prolific, must not be allowed to pass on their deficiency to another generation. Each defective strain as it makes its appearance must come to an end. There must be no compromise. There need be no inhumanity.

A Royal Commission in England on the Care and Control of the Feeble-Minded years ago advised that there persons should not be permitted to marry. Sir Archdall Reid recently pointed out in an article in the *Edinburgh Quarterly Review*:

> While feeble-mindedness is already an obstacle to marriage (for the defective person is seldom attractive in courtship), marriage is not necessary for procreation. Defectives tend to follow their instincts unrestrained by morality, which they have been incapable of learning. They are not so much immoral as unmoral, like lower animals. Defective men may have some difficulty in finding paramours but, as a rule, defective women experience no difficulty, hence the large numbers of illegitimate children produced by them. Effective restraint needs measures much stronger than those imposed by prohibition to marry. Short of euthanasia, only two such measures can be thought of:
>
> (1) Detention in public institutions of all mentally defective persons. In a tentative, feeble, ineffective way, without any general appreciation of the immensity and gravity of the problem, all civilized States have been groping towards this method, but owing to the disproportionate increase of defectives this method is rapidly becoming, indeed, has probably become, impracticable.
>
> (2) Surgical operation, whereby defectives are rendered incapable of bearing offspring. Sterilization is now legal in no less than fifteen States of the American Union and over 3,000 defectives have already undergone sterilizing operations.

When we legislate here on this matter, let us drop sentimentalism; let us face these disagreeable facts as they are and looking to the future legislate on practical lines.

After strict judicial formalities had been complied with, who could seriously object to all the hopeless mentally deficient children, the slobbering idiots, filthy in their habits, unable to take care of themselves or be taught anything—to use Tredgold's words—"stunted, misshapen, hideous and bestial specimens of morbid mankind" being given euthanasia, instead of being a burden to the State and a continual source of irritation, mortification and sorrow to their parents and relations?

When it is certain no improvement can take place, the morons and all other feeble-minded persons of both sexes should be sterilized before puberty. Many of them then—as they could safely be at liberty—would be able to follow some occupation under the guidance of those responsible for them, instead of being a burden to the State; at the same time there would be no danger of "passing on their deficiency to another generation."

I know that some of the subjects I have touched upon to-night are distinctly controversial and invite discussion; but no discussion can take place now.

In due course the secretaries will no doubt arrange for papers to be read on some of these subjects, when a full discussion can follow.

TEETH AND HEALTH.[1]

BY VAL. MACDONALD, L.R.C.P. ET S. (EDIN.), D.D.S. (PENNSYLV.),
Melbourne.

FULLY realizing the great necessity for the existence of such a body as the Public Health Association of Australasia and of the vital rôle it must play in the future welfare of our people, I can assure you the more sincerely how deeply I appreciate the compliment you have paid me in asking me to address this meeting to-night.

In all your efforts for the public weal, none looms more largely on the horizon of the future than that directed to the scientific development of preventive medicine.

In past years many have been the milestones of progress in both medical and dental science, though each has trodden a more or less independent path. Now the finger-posts point to one broad road ahead, the highway of preventive medicine, along which both must journey side by side. It is chiefly due to health problems of the great war that this result has been attained to-day, for only then was the importance of scientific dental knowledge realized and finally acknowledged by the Army Medical Corps authorities. In the successful treatment of any disease it is a matter of first importance to endeavour to find the cause and where possible to destroy or remove it. Moreover, we must go beyond

[1] Read before the Victorian Branch of the Public Health Association of Australasia on November 7, 1921.

that, even to the source of origin of that cause. Thus, it is not sufficient in a case of malaria to demonstrate the presence of the parasite in the blood and to destroy it. Preventive medicine demands that we seek out the life history of the parasite and prevent further possibility of infection from that source, by destroying the breeding place of its host. Now, the medical man in searching for septic foci may refer a patient to the dentist, who in turn may find and remove such foci. But that is not sufficient; we dentists realize that preventive medicine demands that our every effort must be directed not only to the annihilation of such foci, but rather to the prevention of any possibility of their formation. Out of that recognition has been born the branch of preventive or prophylactic dentistry and in its future development we already feel assured of the whole-hearted cooperation of the medical profession and the help and interest of an ever-increasing section of the lay public. The assistance, too, of the X-ray expert, the bacteriologist, the biochemist and of our own orthodontic specialist is of untold value.

Many parents attach but little importance to the first or deciduous teeth and at the same time frequently mistake the six-year molar for a deciduous tooth, so that it is not uncommon to see a child of seven or eight years for the first time and find even the six-year molar beyond salvation. In the case of broken down or abscessed deciduous teeth, if they cannot be put in order removal is indicated, but there must not be a ruthless and unnecessarily early sacrifice, which will necessitate months of subsequent nerve strain in the wearing of orthodontic appliances. But, apart from being septic foci and doors of entrance to tubercle bacilli and so on, these broken-down deciduous teeth are functionless teeth and by their very presence invite digestive upsets through the inefficient mastication and insalivation of a too-hastly swallowed bolus of food, often infected food.

Nasal obstruction is a great factor in producing dental deformities, caries and gingivitis. It leads not only to a lateral compression of the dental arches, but even to a curious lack of development of those arches. I believe the latter to be in great part the result of the inability of the child afflicted with nasal obstruction to masticate a mouthful of food thoroughly and to breathe through the mouth at the same time. Bolting of food results and the jaws, not being called upon to function correctly, lack natural development.

In such a paper it is unnecessary to dwell on the connexion of certain types of malformed teeth with disease such as syphilis and rickets. In patients of any age, if cavity formation exists, the septic results can easily be righted, but the question of pulpless teeth is more difficult. A pulpless tooth is too frequently termed a dead tooth, which it is not. If a pulpless tooth can be made healthy, it should be saved. An abscessed tooth can often be saved, but if there is the slightest doubt about it, it is better to extract it, for the risks of retention may be great. Misfitting crowns soon become a dangerous site of sepsis. Crowns should be taboo, if there is any tendency to pyorrhœa.

As to the many ills caused by septic conditions in the mouth, I may mention chronic dyspepsia, inflammatory conditions of the eye, neuritis, arthritis, muscular rheumatism, disorderly action of the heart or even definite lesions, tuberculous cervical glands, anæmic conditions and so on. Mr. F. Steadman has reported one hundred and forty-three cases of cancer of the alimentary canal, in all of which cases pyorrhœa was present. Neuralgic conditions may be due to many different dental conditions, even to unerupted teeth.

No age is too early for dental care. If we are to plant an orchard, our first efforts are directed to the preparation of the soil and then to planting the young trees at regular intervals. Throughout their lives we protect them from the attack of all too numerous pests ready to injure or destroy them. Our trees grow to healthy maturity and bear a rich asset. Are we as careful of child welfare? Surely, no! There is no whole-hearted recognition by the general public of the duty that is theirs. Let us so care for our child orchard that fewer beds will be necessary in our hospitals.

If the child is to have a healthy mouth, with strong, regular teeth, free from caries and in the future free from that scourge pyorrhœa and it if is to become a healthy parent, we must start at the beginning and feed the infant at the breast. No artificial food can replace that which is the child's by the very right of birth and which any woman with her natural mother love must be ready to give. If I see carious teeth in a child under three years of age—and they are all too frequent—I have no hesitation in saying that that child has not been breast-fed or has been very improperly fed subsequently. The breast-fed child, who is subsequently rationally fed and whose teeth are cared for, should not develope caries in the teeth of the first dentition. Then, too, will the permanent teeth come into a cultivated orchard with every chance of being healthy. Give the growing child food that will call forth the full masticatory function of the jaws and not soft, pappy food that will ill serve the jaws and wreck the teeth. Biscuits and other clinging carbohydrate foods and sweets as chocolates do untold injury. If given, at least let the mouth be cleaned afterwards. Teach the child from sign of its first teeth to become accustomed to the tooth brush and as the child grows older, impress upon it the necessity of mouth hygiene. Never neglect the brushing of teeth at bed-time and do drop the "biscuit in bed" habit.

If in spite of all care caries is evident, do not neglect it. Also do not neglect irregularities in position of the teeth or mal-shaped arch. Give the child and the orthodontist a chance of early treatment. I have not dwelt upon the actual "cutting of teeth," as that would require an evening to itself, but remember this, that normally it is a physiological process, albeit one that may easily become pathological in the delicately balanced organism of the infant. Even in the young adult an erupting or an impacted tooth may cause nervous derangement as well as neuralgic conditions. Even an attack of asthma has been determined by irritation about a tooth.

In adult life one of our most common troubles is pyorrhœa, to which many factors contribute. For years we have argued as to its probable local or general origin. We still argue. Personally I have given it many hours of thought. When I realized that the Public Health Association of Australasia was not altogether a medical body, I wondered whether I should put my most recent views on this subject before you, but again I felt that a public health association was surely a very important link in the chain of preventive medicine. So I scrapped my hesitancy and give you now those views for your criticism.

How does pyorrhœa start? That is a question most dentists are asked frequently.

We may see a mouth with a gross accumulation of tartar, but clean as a whistle a few days after that is removed. Then again we may see a well-cared-for mouth and the only tartar present is this black deposit around the teeth beneath the free margin of the gum; further search will generally reveal pyorrhœal pockets. How has this deposit formed and why?

Bearing in mind what a valuable index to disease the tongue may be, I have studied the gum margins carefully for index signs there. I have found one day the gums flash up with deeply congested areas along the free margin and yet again next day no sign of congestion; a few days' quiet and another flare up; and so on. During these attacks the margins bleed easily and a small amount of blood held between gum and tooth clots and adheres to the tooth surface, forming a thin film added to by subsequent bleeding as before. Food particles and tartar gradually add further minute layers and so the irritation to the gum becomes constant and even the force of mastication adds further injury. Thus an easy path of entry is established for the bacteria ever present in the mouth and ready to take on a pathogenic rôle.

Why this original congestion of the gum margin? I believe that this early congestion is due to the deleterious action of toxins absorbed from the lower portion of the intestinal canal and that there is far greater absorption than we realize. In the great majority of these cases I find a history of more or less chronic constipation. That simply means that for days perhaps the bowel is improperly emptied and a constant absorption is going on. Then, to make matters worse, we, like sheep following one another on a long and narrow path, have resorted to the pill or cascara habit, with what result? Simply to produce an unnatural, semi-liquid motion, with a considerable increase of absorption during the process and a general feeling of rottenness which is simply a degree of toxæmia. This passes gradually and a sense of well-being succeeds, but, as with the opium-eater, the habit does infinite injury. There is a loss of tone of the bowel and the now more or less constant toxic absorption lowers the resistance of all tissues and of none more so than the margin of the gums. An inroad for the bacteria in the mouth is opened up and, as long as the unnatural condition of the bowel is allowed to exist, the treatment of the resulting pyorrhœal condition is severely handicapped. Salvation lies not in drugs, but in a correct and not too liberal diet sheet and properly graduated and regular exercise in the open air and a fuller knowledge of the ductless glands. Once again I may remind you that we ardently pursue lost health when it has become a will-o'-the-wisp, but do all too little to safeguard it when in our possession.

"He 'scapes the best whom Nature to repair
Draws physic from the fields in draughts of vital air."

An old saw and a very wise one.

Diet brings me again to carious teeth, for therein the chief trouble lies.

Saliva must be secreted in sufficient quantity and be of alkaline reaction to prevent caries. The alkalinity index of saliva is of special import. Certain food-stuffs, or substances in them, stimulate or depress that index, *e.g.*, acid substances, such as citric and tartaric acids, which are widely distributed in fruits and vegetables, stimulate an alkaline flow of saliva, not only in sufficient quantity to neutralize the acid present, but the index is actually raised for a considerable time. Alkalies, on the other hand, depress the alkaline secretion. Salt at first stimulates but subsequently depresses the alkaline secretion. Bitters, *e.g.*, quinine sulphate, stimulate the alkaline flow and their action is long continued.

An important constituent of the saliva is a ferment known at ptyalin and the ptyalin index is greatly increased by dilute organic acids. Sulpho-cyanate of potassium is present in saliva in varying quantities and it is still advocated as a substance exerting a beneficial influence. It is held to retard fermentation and lessen acid production. In viscous or ropey saliva we find mucin present in quantity undoubtedly favourable to dental caries and oral sepsis forming a sticky mixture with carbo-hydrates.

Now the possibilities in saliva are very great and much research remains to be done in that direction.

Diet, more than anything, will influence the conditions of saliva and a correct diet will aim at stimulating the flow and raising the alkaline index.

Preventive dentistry or oral prophylaxis as it is more generally termed, aims at two things:

(1) Freeing the mouth from every possible source of irritation and sepsis.

(2) Enlisting the hearty cooperation of the patient to keep the mouth healthy.

It may be impossible for the patients to keep the mouth in perfect order without assistance, but the greater their efforts to do so, the more wholehearted will be the dentist's effort on their behalf, for do not forget the dentist is but human. The efforts of the patient in brushing the teeth should be directed to cleansing the teeth thoroughly and to a massage of the gums at the same time. Use a brush with well-spaced rows of bristles of medium hardness and let the brush not be too large; so many are. It is not sufficient to use a sweeping movement of the brush across the teeth, but also and chiefly an up-and-down movement parallel to the long axis of the teeth; at the back of the lower front teeth a rotary movement is also necessary. Brush the gums just as vigorously as the teeth; it

is a massage for them and they will stand it. Moreover, if you do not do so, you will not be successful in brushing around the necks of the teeth. Use a good tooth paste; modern research condemns the use of alkaline pastes as salivary depressants. The use of dental floss silk and toothpick are advised only if care is taken not to injure the gum in their use.

No food or drink should be taken in the early morning unless the mouth has been brushed and at night no food may be taken after the teeth have been cleaned. I believe in fruit, raw and cooked, entering largely into the diet. Let the food be such that it commands some chewing force, which in itself has a mechanical cleansing action on the teeth. Let it be such as to contain sufficient undigested residue to insure with fruit and exercise a healthy daily action of the bowels. The advocates of a strongly acid diet founded chiefly on observations of native races with more or less immunity to dental caries do not, I think, make sufficient allowance for the outdoor life of the natives as compared with that of our more or less artificial conditions of civilization.

Upon educational measures and the need for special legislation I must briefly touch before I close. The chief educational measures I would suggest are, firstly, that a short series of lectures on dental hygiene and oral prophylaxis be given to fifth-year medical students who at present through no fault of their own are for the most part in blissful ignorance of this subject wherein they might in subsequent years exert so vital an influence. Secondly, I would suggest that such a course of lectures be also given to all school teachers, either in their annual summer camp or elsewhere. They could then chat with their pupils and instruct them with an intelligent interest, say, once a week, simplifying the lecture to suit their classes.

In regard to legislation, let me remind you that the late Sir William Osler, one of the greatest clinicians of our time, expressed his belief that the ill-effects of dental caries are greater than those of alcohol. Here is a disease affecting 90% of our population. Many of those affected are unable to command dental attention. This opens up an avenue for all manner of diseases, from tuberculous glands to intestinal cancer, and yet our legislators close their eyes to this loss to our working productive power and endow hospitals to alleviate, too late, their sufferings which an earlier and more profitable endowment to dental clinics and dental research funds would have spared them from. There is practically no encouragement to research work here, work which the ordinary practitioner cannot under existing conditions pursue, however great may be his desire to do so. The aim of special legislation must be more and more directed to problems of child welfare and of those problems none is more important than that of dental caries and all that follows in its train. Let us not forget that the child of to-day is our adult citizen of to-morrow and that his value as an asset to the State is in direct ratio to his health and mental development, which will ever go hand in hand.

Reports of Cases.

RHEUMATIC FEVER COMPLICATING ADVANCED PREGNANCY.

BY E. B. HEFFERNAN, M.B., B.S. (MELB.),
Melbourne.

ON March 11, 1922, I was called to see Mrs. M., a primipara, aged twenty-five years, who had been pregnant a little over seven and a half months. She gave the following history: Ten days earlier she had travelled to Belgrave and been "soaked to the skin." She had sat before a fire and allowed her wet clothes to dry on her before returning to Melbourne. She felt shivery on the homeward journey and on the following day felt too ill to get up. She was very hot and had a bad headache. The second day after the wetting her right knee became swollen and painful. During the next week she remained in bed and noticed that she perspired freely and that her urine was highly coloured. Her right ankle was then affected and her general condition became much worse. It was at this stage I first saw her.

On examination the patient was very flushed; her eyes were blood-shot and she was perspiring freely. Her tongue was dirty, but her throat was clear. Her temperature was 38.3° C. (101° F.) and her pulse-rate 100. No bruits were heard on auscultation of the heart; the sounds were myocardial in character. There was no apparent enlargement. Nothing abnormal was detected in the lungs. The right knee and ankle were very much swollen and tender. The uterus corresponded in size to the period of pregnancy given. The urine was acid and contained urates and some albumin.

She was given calomel, 0.24 gramme (four grains), followed by 1.2 grammes (twenty grains) of sodium salicylate with sodium bicarbonate every two hours for the first twenty-four hours. Local treatment was applied to the affected joints. Slight improvement followed, but this was only temporary and for the next three weeks, in spite of every form of anti-rheumatic and antiseptic treatment, the patient grew steadily worse. Not only did the joints already affected, not improve, but fresh joints were involved. At the end of the first week I strongly advised induction of labour, but could not obtain the patient's consent.

By the third week the heart showed definite signs of dilation and the pulse-rate was rising. The patient finally decided to follow my advice and was removed to hospital on April 1, 1922.

Under general anæsthesia I ruptured the membranes, packed the vagina and applied a tight binder. At the time I noticed that the *liquor amnii* had a strongly offensive odour, although the fœtus was alive. Pains began an hour later, the first stage of labour lasting fifteen hours under morphine-scopolamine anæsthesia. The patient was then instrumentally delivered of a living female infant (premature, eight and a half months). When the uterus was emptied the same offensive odour was noticed.

After parturition the temperature became sub-normal and the pulse-rate fell to 80, but on the second evening of the puerperium the temperature rose to 38.9° C. (102° F.) and the pulse-rate to 112. Sodium salicylate was again given and pushed with the most gratifying result. By the fifth day the temperature was normal and remained so, the pulse rate gradually falling to 70 by the tenth day. The affected joints, the right knee and ankle and the left knee and ankle, rapidly decreased in size and became free from pain, only a little stiffness remaining.

The uterus involuted well and the lochial discharge was normal in every respect, except that the offensive odour continued in spite of a eusol uterine douche and daily vaginal douches until the sixth day.

Lactation was normal; in fact, the supply of milk was unusually good. The infant was perfectly healthy.

The remarkable feature of the case is the rapid response to anti-rheumatic treatment when the uterus was emptied.

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The Prognosis in Pulmonary Tuberculosis.

IN every discussion on the general problem of the control of tuberculosis enthusiasm and faith are pitted against cold calculation and sceptical analysis. The factors comprising the pathogenesis of the disease are so numerous and complicated that epidemiologists are apt to overlook some and to argue on incomplete premisses. The clinician is usually concerned with prognosis in the individual and his estimates are constructed on general impressions, experience and habitual caution. When his patient presents signs of extensive or rapidly extending disease no doubt concerning the seriousness of illness can exist. Under infrequent conditions the disease may become arrested and the bad prognosis is not borne out. It is very easy to attribute the improvement to the treatment adopted; the mistake in prognosis is not realized nor admitted. Errors in prognosis are much more common when the patient is seen in the early stages of the disease. The clinician cannot be blamed for mistakes, because many of the factors which influence the course of the disease, are either unknown or but imperfectly understood and only sparse information is available concerning the fate of consumptives grouped according to the length of incubation, the virulence of the organism, the degree of resistance offered to the infecting organism, the age factor, the sex factor, the nervous and psychical factors and so on. The influence of environment both on the diseased in regard to their chances of recovery and on the healthy in regard to the risk of infection has long been recognized, but even this influence is not usually analysed with mathematical accuracy.

In endeavouring to ascertain the probable effect of a given form of treatment on tuberculous infections of the lungs it is essential to obtain full information concerning large numbers of individuals or sections of the whole community. The mortality curves are important, but caution should be exercised in the interpretation of the figures. The fact has been established that the number of deaths attributed to pulmonary tuberculosis in England and Wales fell continuously from 1838 to 1905 from 39.9 per 10,000 living to 11.4. In regard to the earlier years there would appear to be a possible source of considerable error in diagnosis. In the next place, it must be recognized that in more recent times there has been a tendency on the part of the relatives of deceased patients to appeal to the medical practitioner to suppress the fact of a tuberculous infection. But even if the mortality figures be approximately correct, it is necessary to realize that the incidence and mortality of every disease undergo wide variations, usually in wave-like curves, often extending over long periods of time. Again, the mortality curve for males and that for females have not run parallel during the last half of the nineteenth century and the first two decades of the twentieth. Some interesting information can be obtained by a comparison of the curves for males and females in the Scottish cities with those in the cities of England. In Australia the mortality rate fell 27.7% between 1905 and 1914. On the other hand, since the beginning of the war the rates have been irregular and there has been no semblance of an improvement during the years 1918, 1919 and 1920. The notification figures do not throw much light on the problem. They are incomplete in New South Wales and apparently irregular in other States. If the medical profession would recognize the importance of notification as a means of providing information concerning the incidence of the disease, it would be much easier to establish a basis for a scientific and accurate prognosis of pulmonary tuberculosis.

The sanatorium may be regarded as the best place for the collection of information concerning the fate of persons with consumption. Facilities are provided for the tabulation of the known factors in the ætiology and pathogenesis of the disease. On this basis a reliable classification could be established and the histories of the patients could be followed through a series of years to ascertain the prognosis of each type. Dr. Noel D. Bardswell and Mr. J. H. R. Thompson presented in the year 1919 the results of a careful investigation into the value of sana-

torium treatment. The methods adopted were similar to those adopted by Elderton and Perry at the Adirondack Sanitarium and the results were similar. The conclusions drawn by Dr. Bardswell and Mr. Thompson are very significant. They found that the mortality rate of patients in the early stage of the disease was nearly six times that of the general population, that it was over sixteen times the mortality rate of the general population when the patients had entered the second stage of the disease and about thirty-eight times when they had entered the third stage. Moreover, the mortality diminished with the age of the patients at discharge. It appears that the mortality rate among those discharged from the sanatorium with the disease "arrested" was 4.3 times that of the general population. In other words, the prospects of cure in the patients discharged from the sanatorium when all signs of active disease have disappeared, are by no means uniformly good. When the patients are discharged "much improved" the prospect of cure is small. Allowing for the same number of deaths as would occur among a community of persons of the same size, sex distribution and age distribution, about one-third of these patients were dead within eight years of discharge. The chances of recovery are still less favourable when the criterion of the absence of bacilli from the sputum is applied. The mortality rate among those who were admitted to the sanatorium in the first stage of disease and who were discharged with their disease "arrested" and no bacilli discovered in the sputum either at admission or at discharge, was 2.7 times that of the general population, but it cannot be denied that this group may and often does contain persons who would recover under all conditions; indeed, it may be questioned whether some of them actually have clinical tuberculosis. The mortality rate of patients in the first stage, whose sputum contained bacilli on admission but not on discharge, was nearly five times that of the general population.

These are a few facts on which prognosis of pulmonary tuberculosis should be based. The information is scanty, but as far as it goes, it indicates that at best pulmonary tuberculosis is still a disease with a terribly high mortality. We need data of a similar kind collected outside the sanatorium before the actual recovery rate of pulmonary tuberculosis without treatment can be fixed. If this could be determined, it would be necessary to ascertain the influence of the various kinds of environment on the recovery rate. Dr. Bardswell proved quite conclusively that tuberculin as it was applied at the King Edward VII. Sanatorium, Midhurst, exercised no effect on the recovery rate. Reliable statistics, examined in the same critical spirit, in connexion with tuberculin treatment applied by other clinicians and by other methods, are few and do not carry proof of a curative action. In Australia there has been too much reliance placed on the condition of the patient at the time of discharge from the institution and too little critical examination of apparent cures. Three thousand persons die each year from this disease. If pulmonary tuberculosis can be arrested in a relatively large proportion of cases, a supreme effort should be made to reduce this number of deaths. If, as would appear to be the case, treatment is of small avail, save in rendering the condition of the infected persons more tolerable and lengthening the time during which they can perform productive work, all our energy should be concentrated in an effort to apply prophylactic measures. It would be sound economy if the Federal Government were to set aside a round sum of money each year for research into the relations between infection and resistance and the means available for controlling the one and enhancing the other.

SAVING BABIES.

THE maternity bonus is often called the baby bonus, because the gift of five pounds from the people to the people was intended to be an investment in healthy babies. By relieving the woman of financial difficulties at the critical period of the birth of a baby it was thought that her health would improve *pari passu* with the increase of comfort and that the baby would benefit as a result. The scheme as embodied in law was taken a little further, in that the same gift was extended to women who travailed and brought forth dead babies. Whatever was the intention of the framers of the Bill or of the legislature when it was considered and whatever was the reason why the people accepted the

measure as a beneficent provision, likely to be productive of much good, the fact remains that it has failed completely and unquestionably in reducing the dangers of child-birth to both mother and infant. It is unnecessary to waste words in this place on the cause of this failure and it would be equally unprofitable to argue the points that can be urged against the scheme. The fact alone needs be recorded that the greater part of three quarters of a million pounds sterling is misused to the detriment of the welfare of the community every year. This waste is a very serious matter from the point of view of preventive medicine, because the baby bonus under ideal conditions should strengthen the manhood of Australia by protecting infants from some of the risks attendant on their arrival in this cold world. The sum is so large that a moiety might be retained for the present purpose under safeguards and discrimination and the remainder utilized in a manner that must effect the original object to a considerable extent.

It has been pointed out by Dr. Fourness Barrington that the morbidity and mortality of women in child-birth and of infants before, during and after birth could be sensibly reduced by the establishment of better and more accommodation in lying-in hospitals and homes, by an improved system of training of medical students and trainee nurses in the science and art of obstetrics and obstetrical nursing, by a feasible measure of control of midwives and by the application of preventive medicine to the expectant mother and the unborn babe. All this costs money and he has suggested that the now squandered and ill-directed maternity bonus might be deflected in part to meet this expenditure. The public is like a child; if money be given to it for a particular purpose, it will expend it without thought and without intelligence on something else. The Federal Government has the responsibility, when dispersing a great sum of public money, to see that the purpose of the distribution is attained. Women in pregnancy need careful supervision to anticipate occasional dangers. Surely a part of the money should be expended on this work. There is no hazard; it is definitely known that lives can be saved, suffering avoided and waste of money prevented by pre-maternity care. Then there is the appalling catastrophe of syphilis to be attacked. We have dealt on several occasions with this subject and Drs. Fowler and Fairley have shown the way in which preventive anticipatory action, applied before it is too late, results in the substitution of healthy, strong, new citizens for maimed and defective burdens to the State. Part of the money should be ear-marked for the prevention of deaths of infants or worse through the poisonous effect of syphilis. Puerperal fever and all forms of puerperal infections can be reduced by improved institutional treatment of women during their confinements. Dr. Fourness Barrington has urged the better equipment of obstetric hospitals and especially the enlargement of the Royal Hospital for Women in Sydney and its adequate adaptation as a teaching institution. All and every means for improving the practice of midwifery must be reflected in a lowered morbidity and mortality of women bearing children. Again, money is required and it could be taken quite legitimately from the ill-spent five pound bonus.

The causation of death and defect in infants is, unfortunately, still a partially closed book. Many facts have been ascertained, but much, very much, more knowledge of ante-natal pathology is needed before the fœtus can be given a fair chance. The fœtus is obviously exposed to risks of the most diverse kinds, but it is evident that many of these risks could be removed if they were properly understood. Extensive research in the metabolism of the expectant mother and her unborn infant, both in health and in disease, must be undertaken if we would fathom some of the manifest effects of the disorders of pregnancy. The bio-chemical and biophysical phenomena of the rôle played by the glands of internal secretion in pregnancy are being forced on the attention of the obstetrician. Patient endeavour and the exercise of ingenuous methods of investigation would disclose information of practical importance to the future race. There are many pathological problems awaiting study and solution. The investigator cannot be expected to devote his time and energy without remuneration to the study of these matters. It is nobody's business to pay for this research and therefore it is largely left undone. Judged solely from the aspect of insurance, an annual premium paid out of the

maternity bonus for work of this kind is sound business. In Europe, wherever a national insurance has been introduced, there has been a special provision made for research as an essential and indispensable part of the scheme. If the Federal Government really wishes to help Australian mothers and their new-born infants, it should insure the health of the latter out of the five pounds now wasted. If the proposal were adopted to allocate the greater part of the £750,000 of the maternity bonus to these and other measures aiming at a reduction of illness and death of women and of death and disability in infants, it would be necessary to adjust the relations between the Federal Government and the State Governments in regard to the institution, expansion and maintenance of the various agencies necessary for this work. Lying-in hospitals at present look to the State Governments for subsidies. The voluntary charities for the promotion of the welfare of mothers and infants are at present purely State institutions. If the support of the hospitals and other institutions were in large measure a charge on the Federal Government and the State authority retained its present degree of control, difficulties might arise in the smooth working of the scheme. Success cannot be attained unless the medical profession is enabled to develope the work and to build up a sound method of teaching and of research. Departmental interference would endanger the project. In these circumstances the question should be carefully considered whether a dual or a single control would be preferable. The decision should be governed by common sense and by not by political considerations. It must be remembered that the medical profession alone can carry out the work and that freedom from lay interference is essential.

ANGIONEUROTIC ŒDEMA.

THE name angioneurotic œdema that is applied to the clinical syndrome which it represents, indicates in a large measure the view that has long been held as to the causation of the condition. The decided hereditary tendency, the distinctive local manifestations, the persistent and frequent nature of the attacks and their mode of onset and the undoubted psychic element sometimes met with in its appearance all lend colour to the view that angioneurotic œdema ought to be classed among the paroxysmal neuroses. Osler[1] stated that it belongs to the erythema group of skin diseases, the other members being simple erythema, *erythema exudativum, herpes iris, erythema nodosum,* some purpuras and urticaria. It is urticaria "writ large."

The true nature of the condition has, however, always been obscure. When the series of phenomena included under the term anaphylaxis was first studied, observers sought to explain the angioneurotic syndrome in the terms of an anaphylactic reaction. Clinically it had often been found that a sudden onset of symptoms followed the ingestion of certain articles of food in some individuals. When one attack had passed and gone, a second attack would be induced by the ingestion of the same kind of food as had apparently caused the first attack. It was supposed that the protein in the ingested food acted as a sensitizing antigen. If this were really the case, it would have to be shown that protein or its primary dissociation products could pass into the blood stream. Some observers, including Oppenheimer, claimed to have discovered foreign protein in the blood and even in the urine of animals which had been fed on large quantities of this protein. Many others failed to confirm these findings. It has been offered as an explanation that the proteins in question entered the circulation under abnormal local conditions of the intestine. These conditions would have to be so abnormal that the action of the proteolytic ferments in the alimentary canal and the action of hydrolysis were entirely held in abeyance.

Dr. J. McIlvaine Phillips[1] has published reports of two typical examples of angioneurotic œdema occurring in dogs. Dr. Phillips states that these attacks were closely analagous to the condition occurring in human beings, both in regard to probable cause and their mode of onset and course. He also states that in man there are two varieties of angioneurotic œdema, one in which symptoms of the most violent nature commence soon after eating the offending protein, with rapid development of vast œdematous areas and the other variety in which no symptoms are shown for hours or days and in which the areas of œdema are more clearly defined.

To one bulldog puppy, aged five months, a meal of fresh cooked pork was given, the first that had been fed to him. Within a short time he began to vomit and scratch himself and profuse diarrhœa, which was occasionally hæmorrhagic, occurred. Some hours later extensive œdema developed. This subsequently subsided and at the end of forty-eight hours the dog was practically well. The animal was kept on pork-free diet for twelve months and no attack occurred. After this period, scratch skin tests were made, commercial protein being used. A well-marked reaction occurred after about ten minutes. The family history of this dog was free from any of the "diseases dependent on sensitization."

The second instance was one of a cocker spaniel that showed repeated attacks of localized areas of œdema. These areas developed suddenly and singly and disappeared at the end of twenty-four hours. There was no pruritus and no systemic disturbance. It was noticed that these attacks came on in the night or on the day after eating canned fish for his

[1] *American Journal of the Medical Sciences,* CXXVII., I., 1904.

[1] *Journal of the American Medical Association,* February 18, 1922.

mid-day meal. No skin tests were made. Abstinence from fish for five years seemed to cure the idiosyncrasy and the dog could then eat fish with impunity. One of the dog's offspring suffered from eclampsia and another from asthma and *erythema multiforme*.

Dr. Phillips reports the history of a man, thirty-seven years of age, who suffered from angioneurotic œdema. He was medium sized and well nourished. Every year he suffered from a nervous breakdown and from vague, indefinite symptoms of asthenia and headache. He had had eczema as a child. For a period of three years this man suffered from large areas of swelling which appeared suddenly in different parts of the body, but most often on the face and lips. An attack generally appeared without warning or apparent cause, though sometimes a slight injury would precede it. Skin tests were made with many varieties of commercial protein. No reactions were obtained, excepting with pork, which caused a well-marked wheal to appear. An intra-dermal test also led to a reaction. After abstaining from pork the patient's health greatly improved and he was free from attacks with but one exception. This attack appeared in the night, affecting the tongue, was slight in extent and of only two hours' duration. It was attributed by the patient to the ingestion of pastry made with lard. Ten cubic centimetres of blood were taken from this patient. After centrifugation this yielded five cubic centimetres of serum. The patient objected to making any further contribution.

A puppy six weeks old was taken, one that had had a little cow's milk as its only artificial food. Skin tests were applied with pork and human serum; no reaction resulted. Five cubic centimetres of the serum of the patient were injected into the femoral vein of the dog and almost immediately afterwards a solution of seventy-five milligrammes of pork protein. Dr. Phillips states that no long interval was allowed to elapse, because passive anaphylaxis in the dog occurs immediately after the injection of the sensitizing serum. The experiment was without result and no early or delayed anaphylactic symptoms could be detected.

These reports and experiments are of interest in that they indicate lines along which future work can be done. They do not, however, lead to any definite conclusion. The anaphylactic theory of the causation of angioneurotic œdema has yet to be proved.

THE KOTTMANN TEST FOR THYREOID ACTIVITY.

WHEN hyperthyreoidism exists to such a marked degree that the syndrome known as Graves's disease is produced, a diagnosis is easily made. The secretion of the thyreoid gland, however, is so bound up in its activities with those of the other endocrine glands that it is exceedingly difficult to recognize its various anomalies without some definite tests that may be of assistance. Several tests are commonly used for this purpose. Of these, Loewi's test by the instillation of adrenalin into the conjunctival sac is perhaps the best known. Goetsch's skin test is also used, while the sugar tolerance test has been shown to be a valuable guide to the presence of hyperthyreoidism. Examination of the basal metabolic rate, with its increase in hyperthyreoidism and decrease in hypothyreoidism, is of considerable value. The Kottman test for thyreoid activity was introduced in 1920. Drs. W. F. Petersen, F. T. D'Houbler, S. A. Levinson and P. E. Laibe have published the results of a series of four hundred tests made by this method.[1] Kottmann based his test on the peculiar relation of iodine to the metabolism of the thyreoid gland. He assumed, on a basis of previous work with serum in pregnancy, that certain physico-chemical differences must exist in the blood serum of persons in whom there is a variation of thyreoid secretion and that the chief difference would exist in the state of dispersion of the serum colloids. He used silver iodide on account of its well known photo-sensibility. The reaction is similar to that on a photographic plate, except that blood serum is substituted for gelatine. In the preparation of a photographic plate the silver salt is mixed with gelatine and allowed to ripen. As this ripening process goes on, the colloidal particles of the silver salt become larger and more photo-sensitive. An excess of silver salt retards the reaction. So it is in the test. To perform the Kottmann test, 0.25 cubic centimetre of a 0.5% solution of potassium iodide and 0.3 cubic centimetre of a 0.5% solution of silver nitrate are added to one cubic centimetre of clear serum. Silver iodide is formed and the resulting suspension of silver iodide in blood serum is exposed for five minutes at a distance of twenty-five centimetres to a 500-watt "Mazda" lamp (or lamp of similar strength). Then 0.5 cubic centimetre of a 0.25% solution of hydroquinone is added and the colour changes are noted at five-minute intervals. Silver iodide is reduced to free silver and a brown colour developes. In the presence of hyperthyreoidism this change of colour is delayed. Drs. Petersen, D'Houbler, Levinson and Laibe have tabulated their results. In the serum from 139 normal persons the reaction was "normal" in 136 and "slightly retarded" in three. They state no definite periods of time for any of the reactions. In the serum of seventy patients manifesting definite clinical signs of hyperthyreoidism the reaction was "markedly retarded" in sixty-five, "slightly retarded" in two, "normal" in two and "accelerated" in one. In the last three cases hyperthyreoidism was proved to exist by estimation of the basal metabolic rate, which was found to be definitely increased. In the serum from eleven patients who had been treated with bromides the reaction was "markedly retarded" in all. In the serum from two patients suffering from fright definite retardation was manifested. The serum from patients suffering from a great variety of diseases showed normal reaction in the vast majority. In a few there was a slight retardation. In the case of two patients suffering from lobar pneumonia, one from scarlet fever and one from erysipelas the reaction was "accelerated." The conclusion that can be drawn from these results is that the Kottmann test is of definite use in the investigation of thyreoid problems. There is a margin of error, however, and other methods of testing, such as estimation of the basal metabolic rate, should be used in conjunction with it.

[1] *The Journal of the American Medical Association*, April 8, 1922.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Salicylates, Cinchophen and Neo-Cinchophen in the Treatment of Arthritis.

A. F. CHACE, V. C. MYERS AND J. A. KILLIAN (*Journal of the American Medical Association*, October 15, 1921) report a series of chemical and clinical studies of the effects of administration of the salicylates, cinchophen and neo-cinchophen in arthritis. It is noted that cinchophen was introduced as a remedy for gouty arthritis, owing chiefly to the discovery of its powerful effects in the elimination of uric acid. It has been recognized since the observations of Garrod that infective arthritis is not associated with retention and deposition of uric acid in contra-distinction to gouty arthritis in which there is disturbed uric acid elimination. Although salicylates have been employed largely on account of their analgesic and anti-pyretic properties and cinchophen has been utilized in gouty conditions chiefly because it stimulates uric acid excretion, a close study of these two classes of compounds has shown that in general they possess somewhat the same properties. Salicylates also increase the output of uric acid and cinchophen has definite analgesic effects. From examination of the blood uric acid, together with the urea and creatinin content of the blood of non-gouty arthritics before and during the period of drug therapy, it has appeared that there was very little definite relation between the fall in the blood uric acid and the condition of clinical improvement. It has been demonstrated in this connexion that the administration of these drugs, particularly cinchophen and neo-cinchophen, might cause a reduction in the blood concentration, not only of uric acid, but also of urea and chlorides, particularly when there is slight retention of these substances. From a series of more than fifty patients examined, it appeared that the excretion of uric acid was not so readily stimulated by these drugs in the presence of infective arthritis as in other conditions. As there appeared to be no relation between the blood changes and the therapeutic efficiency of the different drugs, it seemed improbable that clinical improvement was in any way dependent on the increased excretion of uric acid or other substances by the kidney. The authors have concluded that in general the salicylate and cinchophen groups of drugs showed comparatively little difference in their analgesic, anti-pyretic and uric acid eliminating effects. There appeared be no relation between the therapeutic efficiency of these drugs in infective arthritis and their influence on the blood uric acid. The distinct disadvantage of producing salicylates appeared to possess the marked proteinuria when given in large doses. Cinchophen and neo-cinchophen, especially when given with alkalies, were better tolerated by the stomach than were salicylates, although patients were more liable to have vaso-motor disturbances of the urticarial type from cinchophen.

Quinidine.

At a meeting of the New York Academy of Medicine reported in the *Medical Record* (November 17, 1921), R. LEVY, of the Rockefeller Institute, opened a discussion on the effects of quinidine in auricular fibrillation. In his opinion the discovery of the action of this drug in cases of auricular fibrillation marked an epoch in cardiac therapy. Half the number of patients with auricular fibrillation treated with quinidine in the Rockefeller Institute Hospital had returned to normal rhythm for periods varying from a few hours to six months, according to the duration of treatment. After a small initial dose to test for a possible idiosyncrasy, 0.4 gramme of quinidine sulphate was administered by the mouth every two hours or thrice daily. Repeated electro-cardiograms were taken, which showed an initial coarse fibrillation, followed by flutter and then normal sinus rhythm. Toxic symptoms often occurred for no apparent reason, but were not dangerous. Embolism had also been observed. Resumption of normal cardiac rhythm was not necessarily followed by an improvement in the general physical condition. Levy considered that the drug should not be given to ambulant patients.

During the discussion H. PARDEE pointed out that quinidine was a powerful drug, the handling of which was not yet properly understood. He had treated only ambulant patients, in 60% of whom the normal cardiac rhythm returned for varying lengths of time. He advocated smaller dosage at longer periods than those suggested by Levy.

L. CONNER, B. OPPENHEIMER AND C. EGGLESTON all agreed with Levy as to the importance of the drug in auricular fibrillation, but pointed out that it was impossible to foretell in what cases toxic symptoms would intervene or under what conditions clinical benefit would be derived from restoration of normal cardiac rhythm.

Synergistic Anæsthesia.

S. J. GLASS, JUNIOR, AND H. S. WALLACE (*Journal of the American Medical Association*, January 7, 1922) have furnished a study of the effect of synergistic anæsthesia in regard to the diminution of post-operative discomfort. In a series of patients submitted to operation under ether anæsthesia the synergistic method of Gwathmey was employed, together with preliminary administration of alkalies. The technique involved the ingestion of sodium bicarbonate and lactose for several days prior to operation. The immediate pre-operative treatment consisted of a hypodermoclysis of a 4% chemically pure and sterile solution of magnesium sulphate, of which 200 cubic centimetres were administered one and a half hours before operation. In addition, morphine sulphate in doses of 0.006 gramme to 0.008 gramme in 1.5 cubic centimetres of a 25% chemically pure and sterile solution of magnesium sulphate was administered hypodermically. Two or three injections of morphine sulphate were given at fifteen-minute intervals, starting one and one-quarter hours before operation. The patient was then kept in a quiet, darkened place and gently removed to the anæsthetizing room, where ether by the drop method was administered. It is claimed that under these conditions the sedative effect is prolonged to such an extent that it was rarely necessary to give a post-operative injection of morphine. The amount of ether required was considerably lessened. Post-operative nausea and vomiting and intestinal paresis were minimal. No deleterious effects, such as abscess formation, tissue necrosis or undue relaxation of the bowels were observed.

Physostigmine.

J. MINET AND R. LEGRAND (*Gazette des Praticiens*, November 15, 1921) record their experiences of the value of physostigmine in the treatment of tachycardia and give a *résumé* of the recent clinical reports on this subject. Physostigmine slows the heart and finally it arrests it in diastole when administered to animals in toxic doses. The mechanism of its action is still a subject of conjecture. The authors used neutral salicylate of eserine, 0.5 milligramme, three to six times daily by mouth, or one centigramme of eserine salicylate hypodermically. They found it had a beneficial effect, slowing the pulse, in a few cases of tachycardia, simple and paroxysmal; there was slight improvement in three patients out of eight with extra-systole, auricular fibrillation and flutter. At times the drug was thought to aid the action of digitalis, but it was not given to a sufficient number of patients to justify any definite conclusions as to its value.

New Local Anæsthetics.

M. L. BONAR AND T. SOLLMAN (*Journal of Pharmacology and Experimental Therapeutics*, January, 1922) publish the results of their experiments to determine the efficiency and toxicity of three new synthetic local anæsthetics. These three substances are para-amino-benzoyl gamma dinormal-lutyl-amino theanol hydrochloride, called "G" for brevity; propanol hydrochloride, called "H"; diethyl amino-propyl diphenyl amino-carbinol hydrochloride, called "III." "G" and "H" are related to procain (novocain), but they are less soluble than procain. "H" was found to be non-irritant and therefore holds out some promise of usefulness for ophthalmic work, but in other fields it has no advantages over procain, which is less toxic. "G" was not so effective as "H"; it was just as toxic and was irritating. "III" was less anæsthetic than "G" or "H"; it was equally toxic and much more irritant. Its use for this reason is undesirable.

UROLOGY.

Gum-Glucose Solution in Major Urinary Surgery.

LOWSLEY, MORRISEY AND RICCI (*Journal of Urology*, November, 1921) report their results in the use of an intravenous gum-glucose solution in combating or preventing the effects of shock and blood loss in forty patients on whom nephrectomy, prostatectomy or bladder resection had been performed. Whatever the actual cause of the phenomena of shock, the most important and constant sign of its onset is a commencing fall in blood pressure. During and after operation the surgeon will gain earlier information about the general condition of his patient from reading the blood pressure than from observation of the pulse and respiration. Falling blood pressure leads to anæmia of the bulbar centres and finally to their paralysis. Prevention of too great a fall in the pressure will obviate this. Transfusion of blood or colloid solutions maintains the pressure and the circulation, thus keeping up a relatively equal distribution of the blood, although it is diluted when colloid solution is used. The authors do not regard the unsatisfactory results obtained with gum acacia-saline solution during the war as a valid objection to its use. The difficulties of transport, estimation and maintenance of the reaction and storage prevented the proper handling of this delicate solution. Glucose is incorporated in the solution because of its crystalloid property of absorbing water through the wall of the peripheral blood vessel. The solution is injected during the operation if the patient's condition demands it and in others after the completion of the operation. The injection is given slowly, not more than twenty-five cubic centimetres being given each five minutes. From two hundred to two hundred and fifty cubic centimetres are used as a rule. The constituent substances must be of the highest purity. They claim that gratifying results can be obtained by following the technique described by them. In patients who received an injection during operation, the pre-operative blood pressure level was approximately maintained. In those receiving injection for delayed or impending shock the blood pressure was restored to a satisfactory level with definite improvement in the general condition.

Contracture of the Vesical Neck in the Female.

JOHN R. CAULK (*Journal of Urology*, November, 1921) draws attention to a lesion of the female bladder neck hitherto almost completely neglected by urologists. Chronic inflammatory conditions affecting the bladder neck in the female are nearly always regarded as being due to trigonitis. The actual process is, however, not at the trigone, but is usually confined to the urethra. The cure of symptoms is usually dependent on urethral dilatation. Caulk considers that the importance of infiltrating processes involving the internal sphincter in the female, which are due to disease of the sub-mucous glands lying within the region of the sphincter, has not been realized. Such processes produce contractures of the vesical neck with symptoms resembling prostatism. It must be remembered that in the female infection and trauma are common. Early lesions of this type may be cured by high dilatation, but when they are advanced some means of operative removal of the infiltrated part is necessary. In a case quoted by the author several years of simpler treatment had failed to relieve the patient and a large piece of tissue was then removed from the floor of the bladder neck by a cautery-punch operation. Care has to be taken, by means of a guiding finger in the vagina, to prevent the formation of a vesico-vaginal fistula. In the case quoted an entirely satisfactory result was obtained.

Papilloma of the Bladder.

T. C. STELLWAGEN (*The Therapeutic Gazette*, February 15, 1922) delivers his present ideas on the much-discussed problem of the proper treatment of papilloma of the bladder. He thinks that most papillomata of large size are either malignant or undergoing change towards cancer. When a growth is certainly benign and cystoscopic difficulties are completely absent, fulguration is an excellent procedure. In all other cases open operation should have the preference. The bladder should be opened with all caution to avoid dissemination of superficial growth cells. The growth surface in the bladder should at once be burned down with the actual cautery. The growth should then be removed by some technique of partial resection of the bladder wall and not by simple removal of the papilloma with a small area of mucosa and muscle layer surrounding it. Should it be necessary to cut the ureter in performing the resection, it will be found that the duct has a very strong tendency to re-establish itself at the cut point, even though no attempt at implantation or repair has been made. After the growth has been removed the surrounding area is cooked by means of special copper irons on flexible brass shanks. The irons are heated and have sufficient bulk of metal to retain the proper cooking heat for a long period. The growth itself may be removed by the cooking process if preferred.

Suprapubic Versus Perineal Prostatectomy.

FRANK HINMAN (*Northwest Medicine*, January, 1922) outlines his special method of performing perineal prostatectomy and discusses the relative values of the low and high routes in enucleating the prostate. Many surgeons, encouraged by the brilliant results of the few who popularized the perineal operation, attempted enucleation by this method and brought discredit to it by their failures. To a lesser degree the same is true of the suprapubic operation. The present state of affairs is that surgeons do not consider the lesser mortality of the perineal operation sufficient to warrant the mastery of its technical difficulties, in view of the greater reported functional advantages of the high operation. Hinman considers that with improved technique excellent structural and functional results can be secured from the low operation. In Young's conservative perineal method two lateral incisions are made and the prostatic urethra is preserved intact. This is really a disadvantage in cases of large adenomata, for redundant obstructing folds of the mucosa are left, while with ring type enlargements, which are so extremely common, portions of adenomata are apt to be left behind in the lobe-by-lobe method of removal. Hinman makes an inverted V incision over the posterior lobe. The *verumontanum* and the unaffected posterior lobe with the ejaculatory ducts can then be reflected backwards. The urethra is cut across in front of the adenomatous enlargement and at the vesical orifice. The whole hyperplastic mass *en bloc* with contained urethra is removed. These manœuvres are facilitated by inserting Young's tractor through the posterior urethra and pulling the mass on to its shank, so that the parts at the vesical neck are easily seen before being divided. A catheter is placed through the urethra for its restoration. Packing to control hæmorrhage is mostly infraprostatic and not into the prostatic cavity itself, so that the cavity left may be partly obliterated. The functional and structural results have been excellent.

Indigo-Carmine in Testing Renal Efficiency.

C. M. HARPSTER (*Urological and Cutaneous Review*, February, 1922) demonstrates the advantages which indigo-carmine possesses in the testing of the kidney function in patients suffering from urinary diseases of a surgical nature. The author considers that the method of preparation originally used by Casper is the best and is necessary for the production of reliable results. Five tablets are dissolved in one hundred cubic centimetres of sterile water and then concentrated down to twenty cubic centimetres over a water bath. This gives a 4% suspension of the dye. Intravenous injection of the twenty cubic centimetres is preferred, but intramuscular injection of the same amount may be practised. The time of appearance is the important practical point. With a normal kidney this should be between eight and fifteen minutes. A great practical advantage is the quick and easy determination of the comparative efficiency of the two kidneys and this without ureteral catheterization. Thus, if the dye appears on one side in twelve minutes and on the other in twenty, the interpretation is slight impairment of the latter organ; if the dye does not show from the impaired side for thirty minutes or more, the impairment must be regarded as serious. Quantitative estimation of the excretion of the dye during stated periods after its appearance is not as convenient or accurate as with the phenolphthalein test.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on April 28, 1922, at the B.M.A. Buildings, 30-34, Elizabeth Street, Sydney, DR. T. W. LIPSCOMB, the President, in the chair.

Tuberculosis.

DR. H. W. PALMER opened a discussion on tuberculosis (see page 595).

DR. M. A. MCINTYRE SINCLAIR referred to a meeting held about twenty years previously in the western suburbs of Sydney at which the question of the control of tuberculosis had been discussed. He had been a guest at this meeting. There had been six or seven persons present, of whom at least three had subsequently become President of the Branch. The latest was their chairman of that evening and he took the opportunity of congratulating Dr. Lipscomb on his election to the presidential chair.

He did not take Dr. Palmer very seriously in regard to his pessimistic remarks in the introduction to his address. He, Dr. Sinclair, found reason for optimism and encouragement, both from the point of view of administrative control and from that of treatment. In regard to the administrative control, it appeared from the figures published by the New South Wales Government Statistician that the total number of deaths from pulmonary tuberculosis in 1900 was 1,077 and of other forms of tuberculosis 245, which represented 8.7% of the total number of deaths. In 1920 the number of deaths from pulmonary tuberculosis was 1,118 and of other forms of tuberculosis 184, making 1,302 in all or 6.2% of the total number of deaths. This meant a reduction of 1.5% in the mortality. The pulmonary tuberculosis figures could be expressed in another way. In the course of twenty years the death rate per million of inhabitants had dropped from 795 to 541, while the death rate from other forms of tuberculosis had dropped from 181 per million of inhabitants to 89. Dr. Sinclair regarded this as very satisfactory. Although the population had increased by 50%, there were actually less deaths now than twenty years ago.

In regard to the provision made for the institutional treatment of persons suffering from tuberculosis a very remarkable change had been effected in the twenty years. In 1902 there had been twenty beds at Wentworth Falls, a few at Thirlmere and a few at the Liverpool Asylum. At the present time there were over one hundred beds at Wentworth Falls, over four hundred at Waterfall, over one hundred at Turramurra and approximately another one hundred at the smaller institution. This represented seven hundred beds in the aggregate. In the olden days the conditions at the Liverpool Asylum had been extremely bad. The institution was overcrowded and was altogether unsuitable for the treatment of consumption.

He was more in agreement with Dr. Palmer in regard to the unsatisfactory state of affairs concerning treatment. There was still a great deal to be done before anything approaching a uniform system could be expected. In the early days physicians had pinned their faith to cod liver oil. Then fresh air was used to the exclusion of everything else. Next came Koch's tuberculin. As was well known, tuberculin enjoyed an immense popularity at first, to be discredited after a relatively short time. Later there was a revival of enthusiasm in its favour, but recently opinions appeared to be less confident. The vogue of the so-called sanatorium treatment started with Brehmer, Dettweiler and Walther. Dr. Sinclair mentioned for the sake of completeness treatment by creosote, guaiacol, hetol, cinnamic acid, high frequency currents and other agents. His own opinion was that tuberculin was at times a valuable remedy. Many patients recovered under tuberculin treatment who would not have recovered without it. He issued a note of warning in regard to the use of tuberculin. Unless the whole subject was carefully and seriously studied and the treatment carried out on recognized lines, he would not advise anyone to use this remedy. Casual methods of administration had been responsible for the production of much harm. The doses had to be adjusted in accordance with the appearance of signs of sensibility and hypersensibility. The tolerance of people to tuberculin varied considerably. In the next place Dr. Sinclair referred to Marmorek's serum and the other sera which had been introduced to the treatment of tuberculosis. Very little success had followed the use of these sera. In the last place he mentioned Spahlinger's treatment. He had had unofficial information from Paris to the effect that they should not entertain too great a hope in regard to this treatment.

Dr. Sinclair then spoke of after-treatment. When a patient whose disease had been arrested, had plenty of money the problem was an easy one. It was quite different with the working man. After a few months' treatment in a sanatorium the disease might become arrested, the temperature might be normal and the physical condition sufficiently improved to warrant a return to work. It was a mistake to send such a patient to a station in the back-blocks. Country air was no doubt beneficial, but the hardships of the out-back station life should not be ignored. He was inclined to recommend the patient to return to his old job and to his old home, where he would get good food and would enjoy family comforts. In regard to those whose disease had not been completely arrested and whose temperature, although normal, tended to rise in response to slight traumata, especially if they were still expectorating, the farm colony seemed to be the best solution. He questioned, however, whether the farm colony scheme could be carried out on a large scale. It had been introduced with considerable success by Varrier-Jones, at Papworth, near Cambridge. He regarded this as undoubtedly the best colony that had yet been established. It was run completely by ex-patients, who carried out every trade without outside assistance. All the work in the colony was conducted by the tradesmen inhabitants of the colony. In regard to many trades the production was in excess of the needs and they competed successfully with firms outside the area. A traveller was employed to offer their goods for sale and it might be said that the undertaking had been a commercial success. In organizing such a scheme it was necessary to exercise care in the selection of the persons who would carry out the work. It was a matter of temperament and physical qualities. Dr. Sinclair held that a great deal could be done in this way on a very small subsidy.

He was convinced that the question of the complete control of tuberculosis must be settled in the homes of the people and not in the laboratory. He referred to the housing conditions in cities like Dublin and Glasgow, where slum dwellings and ill-planned flats were common. Kitchenettes should be abolished. In the next place he turned his attention to the question of notification. He admitted that formerly he had advocated this measure, but he was not as enthusiastic as he had been. In New South Wales the Department had carried out its administrative actions consequent on notification in a humane way and had not applied the system as a vendetta against the patient. He thought that the fee for notification should be increased from 2s. 6d. to 10s. 6d. and that this fee should be transmitted to the notifying practitioner without the necessity of the latter making out additional forms. At present half the fee was spent in postage in rendering accounts and sending receipts.

DR. F. GUY GRIFFITHS said that he had heard Dr. Palmer's review of a large subject with great interest. He was in complete agreement with him on many matters. He was glad, for instance, that Dr. Palmer had attached importance to the comparison of tuberculosis with influenza. Some might remember that during the epidemic of plague in Sydney twenty-three years previously six times as many people died in the year from consumption as from plague. Even in the worst months the mortality from plague had been less than that from tuberculosis. He agreed that careless patients were dangerous, that education was of the greatest importance and that early diagnosis, in which the extra-pulmonary symptoms played so large a part, was also of importance. He concurred also in the views that creosote injured digestion and that an advisory board and farm colonies were required. In connexion with these points valuable information might be found in the report of the New South Wales Government Tuberculosis Advisory Board, on which he had served in 1911.

There were other matters on which he did not agree with Dr. Palmer. He thought that Dr. Palmer was too

pessimistic and was even out of date. Social progress was one of amelioration and not of deterioration. Things would become better still as the teaching of Malthus, Darwin and Herbert Spencer gained greater influence in public policy. He attached greater importance than did Dr. Palmer to infection. Large masses of sputum were often picked up by boots and clothing in the streets and were carried into houses. In the homes of consumptives infants sometimes soiled their fingers from the sputum on the floor. Even the best surroundings and a strong frame did not necessarily confer immunity. He had seen pulmonary tuberculosis in prosperous giants. He feared that Dr. Palmer had under-rated the danger of excessive sunshine in New South Wales, where patients did so much better in the winter than in the summer. Bright sunshine killed germs and protected the healthy, but it had a weakening effect on the sick.

He had noticed with great interest how the modern opinion was veering round to the views publicly expressed twenty or thirty years previously by Dr. Camac Wilkinson. Dr. Sinclair had voiced many of them that night. The value of tuberculin had been acclaimed from all parts of the world. He mentioned Professor Beattie's name and that of Spahlinger, of Switzerland. Dr. Hill Joseph had recommended the seaside for early pulmonary tuberculosis. Many others had stated that it was medical treatment that was essential for what was spoken of as surgical tuberculosis. Many agreed that it was impossible to supply sanatorium benefits for all consumptives and that patients in the early stage could rarely be persuaded to enter sanatoria. So severe had recent criticism been of sanatoria, for example, by William Gordon, the late German Sims Woodhead, Jones and Bardswell and Thompson, of the Medical Research Committee, that it was common to speak of the failure of the sanatorium. The two last mentioned authors had stated that the death rate of patients admitted to a sanatorium in the first stage was five or six times that of the general population, that the mortality of those discharged improved was thirty times and of those discharged worse was sixty times the mortality of the general population. They held therefore that the results of sanatorium treatment were by no means satisfactory. On the other hand, William Fanning, of Holt, Norfolk, was satisfied with the results obtained in his own sanatorium. The ideal treatment was that which combined tuberculin with sanatorium methods. Attractive accommodation should be supplied for patients in the advanced stage of the disease.

In a limited time it was impossible to discuss every aspect of the question, but it would be unwise to omit mention of the mathematical investigation of tuberculosis. Striking results had been published by Karl Pearson and Ethel Enderton, by Brownlee and Major Grimwood. Mr. Trivett's statistical work in Sydney would also repay careful study.

DR. W. G. ARMSTRONG stated that he had listened to the discussion with interest. In regard to the general position, he held that a spirit of optimism should govern everyone concerned with the subject. There had been a great improvement during the last seventy-five years. Dr. Armstrong agreed with Dr. Griffith that Karl Pearson and his collaborators had carried out a very large and valuable amount of work in connexion with tuberculosis, but Karl Pearson and the other advanced statisticians had treated the question of tuberculosis from too pessimistic a point of view. They had regarded the fall in the tuberculosis death rate as a part of the natural history of man rather than the result of his actions. Metchnikoff had regarded the decrease as a result of a gradually developing immunity, which was something quite apart from human endeavour. Dr. Armstrong stated his objections to this attitude. Even if the fall had not been entirely due to any social method introduced since the year 1882, it did not, therefore, follow that all the work in social betterment had not contributed to this improvement. Until about sixty to seventy-five years ago no improvement had been recorded. If acquired immunity or some cyclical change had been the reason of the fall in the mortality, it would have been shown long before 1860. It was evidently cause and effect. The earliest evidence in New South Wales in the endeavour to bring about notification of consumption occupied Dr. Armstrong's attention. Every effort had been made to avoid the condition of phthisiophobia. Special regulations had been introduced to avoid this. Dr. Armstrong was satisfied that these regulations had been to a certain extent successful. On the other hand, a regrettable amount of phthisiophobia had arisen within the past five or six years, as was evidenced by the selfish antagonism of local authorities to the proposed establishment of homes for tuberculous persons in their districts.

In regard to Dr. Guy Griffith's remarks concerning the relative importance of plague and tuberculosis, they should not lose sight of the fact that tuberculosis was endemic, while plague was exotic and epidemic. They knew more about the ætiology and epidemiology of plague than of tuberculosis. They could prevent plague more certainly than they could prevent tuberculosis, although they had some knowledge concerning the prevention of this disease. It was necessary to apply that knowledge. In regard to the question of the payment of notification fees without requiring the practitioner to render an account, Dr. Armstrong expressed the hope that action already taken would lead to an improvement in this respect.

DR. W. F. LITCHFIELD thanked Dr. Palmer for his interesting remarks and expressed his general agreement with him. Nathan Raw had drawn attention to the fact that in children tuberculosis resembled the forms occurring in cattle. These forms of tuberculosis manifested themselves in disease of the glands, of bones and of the peritoneum and in generalized tuberculosis. In the adult the chronic forms of pulmonary tuberculosis were caused by the human type of bacillus. It had been shown that in China and Japan, where cow's milk was not used, tuberculosis was common and attacked children and infants. There was evidence that the human bacillus was involved in tuberculosis of bone. Edinburgh authorities believed that the bovine type of bacillus was largely responsible for tuberculosis in children. In New South Wales tuberculosis in children was probably due to the human type. He was very sceptical concerning the bovine hypothesis. In the next place Dr. Litchfield turned his attention to the age susceptibility of infective processes. In tuberculosis the period of greatest susceptibility was undoubtedly in childhood. The infections in adults suffering from pulmonary tuberculosis, in Dr. Litchfield's opinion, usually dated back to childhood. He did not think that adults were very susceptible to the disease. He had seen many husbands with pulmonary tuberculosis who had not passed the disease on to their wives, and wives with consumption who had not infected their husbands. It was the rarest thing in the world for a doctor or a nurse to become infected with tuberculosis in a sanatorium or hospital. Dr. Litchfield expressed the view that tuberculosis spread from person to person, but that allowance should be made in the ætiology for hereditary predisposition, faulty environment and the extreme chronicity of the disease and that the infection took place in childhood. The chief danger lay in children living in the same houses as people with open forms of tuberculosis.

DR. J. S. PURDY, D.S.O., stated that Australia was in a favourable position in regard to the incidence of tuberculosis. It occupied the fourth place among the countries, Rumania, Denmark and New Zealand having the best records. In Australia tuberculosis stood sixth in the list of diseases as a cause of death. Its incidence, however, was sufficiently high to make its reduction one of the chief problems of preventive medicine. It was most fatal in men between the ages of thirty and thirty-four and in women between thirty-five and thirty-nine. There was a distinct relationship between the occurrence of tuberculosis in families and the number of rooms occupied. Damp, ill-ventilated dwellings and workshops were factors in the spread of the disease second only to the one-room tenement. Dr. Purdy expressed the opinion that a proper regulation of industrial conditions and an improvement in the nutrition and physical well-being of the people were the most important factors in prevention. In England the local administration was controlled by special tuberculosis officers working under a medical officer of health. He pleaded for coordination of the various Governmental and voluntary agencies under one head. It was very necessary that the data supplied by the State Statisticians to the Commonwealth Statistician should be uniform. Since the problem was a national one, he favoured the suggestion that the Federal Government be in-

duced to extend its sphere of operations, at least to the extent of securing data on such a subject as the incidence of tuberculosis in various occupations. The establishment of a tuberculosis bureau in Sydney, under the control of a special tuberculosis officer, working in conjunction with the Metropolitan Officer of Health, to whom all notifications of infective diseases were forwarded, was advocated. This would form one channel for admission to all institutions and would make for efficiency in administrative control. Dr. Purdy related the steps he had taken in the endeavour to overcome the overlapping which occurred in Sydney in the activities of the various official and voluntary organizations. He then proceeded to sketch a scheme on which the central bureau could be worked. This scheme embraced the establishment of an honorary advisory board and of a dispensary and the institution of a system of home visitation. Special provision should be made for the treatment of children. The scheme also provided for the after-care of patients subsequent to their discharge from a sanatorium or hospital. He thought that the State Children Relief Department should be transferred either to the Department of Public Health or to the Department of Education and should come under the Principal Medical Officer of the latter until such time as his department was amalgamated with the Health Department. Dr. Purdy thought that a committee might be appointed to consider these recommendations.

DR. R. DICK did not agree with Dr. Palmer that tuberculosis was such a fearsome and hopeless disease. The mortality from consumption had been on the downward trend for many years. He instanced the experience they had had in the Hunter River District. Though the population of this district had increased from 70,000 in 1900 to 170,000 in 1921, the number of deaths from pulmonary tuberculosis was approximately fifty a year. Dr. Dick assumed that there were eight or nine patients alive with tuberculosis to every one patient dying of this disease. He therefore estimated there would be a constant incidence of pulmonary tuberculosis of five hundred. For the whole State the constant number of persons suffering from the disease might be taken as ten thousand. He had formed the opinion that only about 50% of the patients notified were visited by the officers of the Department at the request of the practitioner in attendance. This involved a large responsibility on the part of the general practitioner. The greater part of the work of the prevention of this disease had to be borne by the general practitioners.

Dr. Dick said that a small investigation had been carried out in 1921 in connexion with the milk supply in the suburbs of Sydney. This investigation involved the examination of milk from fifty to sixty dairies. In not a single instance were tubercle bacilli found in the milk. It was proposed to continue this investigation. In the next place he dealt with the question of hospital accommodation for consumptives. He had been trying to find out how many beds were actually available. There appeared to be a difficulty in getting patients into private sanatoria. For reasons that had already been stated by the other speakers, patients did not want to return to the Waterfall Sanatorium after discharge, even if they had improved during their stay. It was very depressing for a consumptive to see living skeletons all around him. The number of beds available in the State appeared to be about 830. Of these, 235 were reserved for ex-soldiers. There would thus be one bed to each 2,500 persons of the community. The proportion in England and Scotland was one bed to 1,500 of the population. In England the death rate was 10.5 per 10,000, while in New South Wales it was 5.4 per 10,000. On this basis it would thus appear that the provision of beds in New South Wales was relatively as satisfactory as that in England. Dr. Dick thought that this question should be carefully investigated.

Reference had been made by Dr. Purdy to the desirability from the health point of view of short hours of labour. They should remember, however, that short hours of labour meant a large amount of free time. He asked what was usually done by the worker during his spare time. In his experience it was not all spent in the open air. Many passed their lives in an unhealthy environment and their housing conditions often left much to be desired. It would be interesting to know whether these factors had any effect on the mortality from tuberculous disease.

DR. C. G. MCDONALD expressed the opinion that the paper and speeches to which they had listened tended to show the vast differences of opinion that existed. There were many difficulties. In the first place, there was the difficulty in diagnosis. He thought that mistakes were often made, particularly in the earlier stages. It was important for the practitioner to make sure that tuberculosis was actually present before arriving at the diagnosis. The diagnosis carried with it a social as well as a medical significance. Much harm might be done by sending a person who was not suffering from the disease to a sanatorium. Moreover, sanatorium treatment was not advisable for every person with tuberculosis. They had found at the Red Cross sanatoria that many patients were intolerant of sanatorium discipline and, though the food was excellent, in the absence of appetite fault was usually found with either the cook, the doctor or the nurse. Unless such a patient were very carefully handled, his discontent would increase and in a short time he would leave the institution. Under such circumstances it was not surprising that there were constant changes in the staff.

Another difficulty with which he dealt, was that concerned with the source of infection. It had been said that one of the chief dangers lay in expectoration in public places. He found it difficult to believe that spitting in the street did much to spread the disease. It was a filthy habit and there were many reasons why it should be combated. He was, however, not convinced that it contributed to an appreciable extent to fresh infections. Indoors spitting was undoubtedly very dangerous. The chief danger lay in repeated infections with massive doses of tubercle bacilli, such as children were exposed to in the homes of tuberculous parents.

Working at the Tuberculosis Dispensary of the Royal Prince Alfred Hospital, he had been struck by the frequency with which a tuberculous husband infected his wife and children or a tuberculous wife infected her husband. He instanced a case in which a woman died of pulmonary tuberculosis at Waterfall and her three children were found to be infected. The source of infection was traced to the surviving partner, who had evidence of long-standing disease. Dr. McDonald pleaded for an increase in the number of dispensaries and an improvement in the training of medical students and doctors in the treatment of this disease. More nurses should be engaged to visit patients at their own homes, to induce all contacts to be examined, to teach the people how to deal with sputum, to show them how to wash infected crockery, to induce them to sleep alone, to avoid kissing and so on. He was convinced that the best work in prevention was carried out by the well-trained, tactful nurse. The patient should be told frankly whether his condition was dangerous to others in regard to infection and as hopeful a view given in regard to his prospects of ultimate arrest of the disease as was consistent with honesty. It was generally accepted that the prognosis of tuberculosis was made worse when hæmoptysis occurred or when tubercle bacilli were present in the sputum.

DR. HARVEY SUTTON, O.B.E., spoke of the paradox in connexion with tuberculosis in children. They had learnt from the medical examination of school children that not one child of school age out of a thousand showed any manifestations of tuberculosis and yet it was agreed that infection occurred in childhood. Dr. Harvey Sutton enunciated the thesis that, while enteric fever was the index of field sanitation, tuberculosis was the index of national nutrition. He had been shocked to hear Dr. Guy Griffiths had indicted sunshine as a harmful agent. He asked how it was that lupus was practically unknown in Australia, where sunshine was plentiful and powerful, while it was a very common disease in England. The preventive and curative power of sunlight had been demonstrated quite conclusively. Dr. Sutton referred to the fact that difficulty was experienced in persuading parents to obtain medical treatment for their children when they were suffering from "malnutrition," ill-defined anæmia, loss of weight, retardation of growth and other general symptoms without any obvious physical signs of disease. He suggested that the conditions indicated a disturbance of nutrition which was often the forerunner of a tuberculous infection and were therefore deserving of the best attention of the practitioner. He suggested that careful investigations should be carried out with a view to the discovery of the

causes determining the varying incidence of pulmonary tuberculosis in different occupations. The incidence was said to be one in twenty-three and one in twenty-seven for farmers and graziers respectively and one in nine for the professional classes. It would appear that members of the medical and teaching professions were peculiarly susceptible to tuberculosis.

DR. T. W. LIPSCOMB closed the debate by thanking the various speakers for a highly instructive discussion and called upon Dr. Palmer to reply.

DR. PALMER began by apologizing for being out of date. His pessimism had been based not only on personal experience, but also on the lessons taught by available statistics. Between the years 1835 and 1860 the general death rate had fallen very little, while the tuberculosis death rate had fallen steadily. Between 1860 and 1885 there had been a marked improvement in the feeding of the race and it was seen that both the general death rate and the tuberculosis death rate had fallen rather more rapidly. Between 1885 and 1910 the general death rate had continued to improve, while the tuberculosis death rate had remained almost stationary. The recent apparent decline in the tuberculosis death rate during the two years following the influenza epidemic could be explained, he thought, by the death from influenza of a very large number of persons infected with tuberculosis. Similarly, he was inclined to regard the post-war decrease in the tuberculosis mortality in England as due to the fact that a very large number of soldiers who fell in the field, were tuberculous. He agreed with Dr. Harvey Sutton concerning the part played by nutrition in maintaining the resistance against tuberculous infection. The suggestion that sunshine, even excessive sunshine, was harmful was unlikely to find general acceptance. He thought that it was unnecessary to argue the point. Spahlinger had been at work from 1913 to 1921 and, although he claimed wonderful results with his tuberculin, he had none for other people to try. He was convinced that infection took place in many instances from person to person. The chief factor determining infection was the lowering of individual resistance.

In regard to tuberculin, his experience had been nearly the same as that of Dr. Sinclair. Only a small proportion of selected patients reacted favourably. He insisted on the necessity for extreme care in its use and a recognition of its limited application. He stated that he had not intended to proclaim sanatorium treatment as the only treatment, though he regarded it as the best for the early stages of tuberculosis. The failure of the many agencies combating tuberculosis was largely due to lack of knowledge and want of coordination. Though he did not believe that it was possible to stamp out tuberculosis, he was convinced that by coordination and organization they would soon be able to reduce the incidence of the disease to relatively small dimensions.

NOTICES.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch. The Scientific Committee reserves to itself the right to modify the arrangements, but it is hoped that no changes will be necessary.

June 7, 1922.

At the Walter and Eliza Hall Institute, Melbourne Hospital, at 8.15 p.m..

DR. W. J. PENFOLD will demonstrate the action of pneumococci on aromatic amino bodies.

DR. W. J. PENFOLD: "Australian Pneumococci."

DR. S. W. PATTERSON: (*a*) "Prognosis in Pneumonia"; (*b*) "Clinical Application of Serum Treatment of Pneumonia."

DR. R. L. FORSYTH will open the discussion on the serum treatment of pneumonia from clinical experience at the Children's Hospital. Papers will be illustrated by lantern slides.

July 5, 1922.

At the Alfred Hospital.

A CLINICAL MEETING will be held, of which the details will be announced later.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

FENNER, NORMAN EDGAR, M.B., Ch.M., 1922 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

GENGE, FRANCIS HARRISON, M.B., Ch.M., 1921 (Univ. Sydney), Burlington Road, Homebush.

HILLIARD, ERIC THEODORE, M.B., Ch.M., 1922 (Univ. Sydney), Mental Hospital, Parramatta.

LITTLE, DUDLEY WILLIAM, M.B., Ch.M., 1921 (Univ. Sydney), Morgan Street, Petersham.

OWEN, ALLAN CAMERON, M.B., Ch.B., 1902 (Univ. Edin.), "Chester Flats," Challis Avenue, Potts Point.

MATHEWS, WILLIAM ROBERT, L.R.C.P., London, 1892; M.R.C.S., Eng., 1892, Barellan.

THE undermentioned has been elected as a member of the Queensland Branch of the British Medical Association:

WHITTLE, HARRY CLARENDON, M.B., Ch.M., 1920 (Univ. Sydney), John Street, Maryborough.

Obituary.

ARCHIBALD LANG McLEAN.

THE sad news of the death of Archibald Lang McLean has been received with the profoundest regret by a very large number of his colleagues throughout the whole Commonwealth. Few men have more richly deserved the popularity and admiration he enjoyed. The medical profession, the Australian community, the world of science and letters have lost a hero of sterling worth. His place will remain empty, for such qualities as his are very rare.

He was born, the son of Mr. and Mrs. R. McLean, of Abbotsford, near Sydney, on March 27, 1885, in Balmain. From his early youth he gave promise of unusual achievements. He went to school at first at Five Dock and later at the Leichhardt Public School, where he established for himself a reputation of excellence at his work and predominance at play. At the early age of twelve years he passed his "junior" examination and thus left the majority of his class contemporaries far behind. At fifteen and a half he matriculated from the Fort Street High School. Distinction marked every phase of his boyhood life. In due course he entered the University of Sydney and spent three years amplifying his general standard of education. In 1906 he secured a place in the honours list for the degree of Bachelor of Arts. By this time he had revealed unusual talent as a writer. He then entered the Medical School and won a high place in the esteem of his teachers and fellow students. He made his mark in the football field as well as in the class-room and was noted for unbounded pluck as well as for ability and scientific accuracy. In his third year he joined the Signalling Corps at the University of the Australian Military Forces and was gazetted as Lieutenant on July 1, 1908. As with everything else, he threw his whole energy and interest into his military work and showed great promise of attaining a high degree of efficiency. In 1910 he graduated and in the following year he registered his surgical degree.

Soon after graduation he announced to his parents that he had sent in applications "for Lewisham and the South Pole." His application for the position of Resident Medical Officer at the Lewisham Hospital was favourably received and he served for a period of six months with benefit to the patients and advantage to his colleagues. At the end of this period he was appointed to a resident position at the Coast Hospital. After he had been at Little Bay for a couple of months, he received a call from Dr. (now Sir) Douglas Mawson to join his expedition to Antarctica. He signed for one year and became Chief Medical Officer and Bacteriologist to the famous expedition. His equipment on board the *Aurora* was perhaps somewhat crude, but in his skilled hands it sufficed for the performance of important duties and for the carrying out of observations which had added to our knowledge of biological phenomena of the most southern regions of the world. The story of the Mawson expedition is still fresh in the minds of men. It is unnecessary to recall the hardships, the temporary disappointments and the ultimate triumphs of that brave

and distinguished band of intrepid explorers in the great white waste. When Mawson was lost, he agreed, without much need for persuasion, to remain with the party. He edited *The Adelie Blizzard* during the time of trials and struggles against the elements and contributed not a little toward the maintenance of good spirits and high hopes. Captain J. K. Davies knew the value of his presence and assistance when he asked him to stay. In March, 1914, the party landed at Adelaide, to receive a welcome fitted for men who had not allowed anything to deter them from achieving their great purpose. He had collected much material and had made many valuable observations which had to be studied and worked into shape. Mawson suggested that he should journey to England to proceed with the scientific work and with the writing of the book which enlightened the world in matters connected with Antarctica. It was from his pen that the greater part of "The Home of the Blizzard" issued and it was his artistic word pictures that awakened enthusiasm in the breasts of thousands endowed with the spirit of adventure. He arrived in England in May, 1914. During the next few months he expended energy and concentrated attention as was his wont on his task. And then came the cloud that darkened the world and left it dark for four and a quarter years. A man like Archie McLean could not hesitate in offering his services. He joined the Royal Army Medical Corps and was first attached to the Ninth Division of the Eighth Black Watch. In May, 1915, he went to France and gained his laurels with the Thirtieth Casualty Clearing Station. A vivid description of the work performed in those days was published in this journal in March, 1917, and a second in the following month. Even when dealing with the horrors of war, his descriptive work was fascinating and irresistible. He suffered a small casualty in the form of a poisoned finger in 1915. About this time he married Miss E. Yates, of Acton, a western suburb of London. Toward the end of 1916 he was invalided with appendicitis. After he recovered, he obtained his discharge and worked at the Royal Herbert Hospital at Woolwich. In February, 1917, he landed in Australia, war worn and considerably aged, but with the irrepressible enthusiasm so characteristic of the man.

Then came an interlude. He determined to continue the bacteriological and biological studies of his material collected during the Antarctic Expedition and sought and obtained a position at Gladesville Hospital for the Insane to facilitate this work. About this time he read a paper on the bacteriology of Antarctica before a meeting of the New South Wales Branch of the British Medical Association. The room was crowded and he held his audience in rapt attention, spell-bound by his story and by the magnetism of his personality. Everyone knew Archie McLean and everyone loved him. This first and only appearance before a large gathering of his colleagues in Australia revealed him as a man of accomplishment and of achieved success in the world of science and brought him into his proper place in the front rank. He recognized that, notwithstanding the vast amount of important work to be completed, his proper place was at the other side and therefore applied for a commission in the Australian Army Medical Corps. His gazettal is dated September 21, 1917. Before he went on active duty, he submitted his thesis in pathology and was rewarded with first-class honours in the degree of doctor of medicine, the University Medal and the Ethel Talbot Memorial Prize. At first he was sent to New Guinea and a little later sailed with a company of reinforcements for Egypt. Again he acquitted himself with distinction. From Egypt he was sent to France. He was attached to the Seventeenth Battalion of Australian Infantry as regimental medical officer. Early in 1918 he was "gassed," but did not leave the line. His service was of the most valuable kind and he gained the respect and admiration of all those with whom he came in contact. In September, 1918, he was awarded the Military Cross for conspicuous gallantry and devotion to duty. The following announcement appeared in the *London Gazette* of March 11, 1919:

"During the attack on August 8, 1918, east of Villers Bretonneux, near Amiens, he followed the attacking troops with his section, tending and dressing wounded under fire on the way. Almost immediately after the objective had been taken, he established his regimental aid post in the village of Warfusée, where he worked continuously under great difficulties. Later, during the advance on the following day, he established his regimental aid post almost on the jumping-off line, where he tended and cared for wounded under heavy artillery fire. His energy and zeal saved many lives."

Later he was mentioned in dispatches by General Sir Douglas Haig. In November, 1918, he was severely "gassed" and was invalided to England. The trauma inflicted to his lungs was considerable and sealed his doom. He recovered to a considerable extent within a few months and was able to engage in military duties in London. At this time Colonel Graham Butler, D.S.O., was Collator of Medical Records, Australian War Records Section, in Horseferry Road. Archie McLean was appointed Assistant Collator. These two men handled the material which was intended for and will, we trust, be used as the basis for the medical history of the war. The magnitude of the work, its intricate difficulty and the demand on both men for the highest order of technical knowledge have not been fully recognized by the profession. Archie McLean performed his task, as he performed every task he undertook, superbly. In July, 1919, he sailed for Australia and in September he landed once again in New South Wales.

His friends saw him an altered man, a victim of a cruel fate. Hope obscured the truth from many and even the knowledge that his damaged lungs had been invaded by tubercle bacilli, fortunately did not lead those nearest and dearest to him to realize that the ultimate result of the process was merely a matter of time. He improved considerably during twelve months spent at a private sanatorium at Leura. During this time his book, "Bacteriological and Other Researches," was published by the New South Wales Government Printer. A review of this book appeared in our columns on January 10, 1920, from which it will be seen that Archie McLean possessed the extraordinary gift of writing a scientific work in language so charming and poetic, in a style so fascinating and with a vividness so clear that it has become the envy and despair of other medical writers. After his discharge from the sanatorium at Leura, he was appointed Medical Officer at the Red Cross War Chest Farm Colony at Beelbangera, near Griffith. Soon his health again broke down and he had to relinquish his work. He spent four months at

Bowral and a somewhat longer period at Leeton. In November, 1921, he was admitted to the Royal Prince Alfred Hospital a dying man. That he lingered until May testifies to the skill of the nurses at that institution. But no one could have tended Archie McLean without straining every nerve to assuage his suffering and to brighten his remaining days. He had never failed in any task before; he lost this great fight after an immense struggle.

DR. E. B. M. VANCE writes:

Those of us who knew Archie McLean at all well must feel acutely his death. A very gallant and gracious gentleman is gone from among us. Medical man, scientist and literary artist, soldier, explorer and sportsman, we shall all remember his amazing activities and wonderful performances with admiration. By his intimates he will also be remembered as a super-sensitive spirit—a man quick to feel with others and one who never saw anything but good in us. We should see to it that his name and fame be not forgotten.

DR. J. G. HUNTER writes:

The untimely death of Captain Archibald Lang McLean, following an illness contracted whilst on active service, removes from our midst one who would have undoubtedly gained high honours in his profession.

McLean had a brilliant academic career. He graduated with honours in arts in 1906 and medicine in 1911, while in 1917 he secured first-class honours and medal for his M.D. thesis, the results of his Antarctic researches. Whilst at the university he was prominent in the various phases of university life, taking a very active interest in the Medical Society, the Sports Union, football, the Glee Club and the University City Lads' Club. My recollections of A. L. McLean date back to school days, but it was not till 1911, when we were both selected as members of the Mawson Antarctic Expedition that we became intimate friends.

Interested in similar work and living together for over two years, I came to appreciate the sterling worth of the man. Of a most happy and cheerful disposition, McLean was beloved by us all. Keenly interested in his own work, he was yet ever ready to assist anyone else should occasion arise. And many a time I had him hauling on a frozen dredging rope, with the wind blowing strong and the temperature well below zero. But it was all a pleasure to McLean; and the greater the difficulties the more he enjoyed it. Though not strongly built, he was endowed with wonderful energy and delighted in action. He was a member of a sledging party which travelled over two hundred and fifty miles along a previously unknown coast-line.

As a colleague he was loyal and helpful. Endowed with a logical mind and a sound judgement, he appeared to grasp intuitively the chief points of any subject he was dealing with and so commanded the respect of all those with whom he was associated. He was possessed of deep religious convictions, but he was never aggressive in his ideas. In fact, it was only in very close acquaintanceship that one realized how deep his convictions were.

Apart from his professional attainments, he had marked artistic tastes and was a versatile writer. It was during our stay in the Antarctic that Mawson discovered his journalistic talent, for McLean occupied the post of editor of *The Adelie Blizzard*, a journal which helped to relieve the monotony of the winter months. So when Mawson proceeded to England in 1914, McLean accompanied him and edited "Home of the Blizzard." As Mawson himself says: "To him the book owes any literary style which it may possess." And those who have read it will readily appreciate his fine literary effort.

McLean did not hesitate to enlist when war broke out in 1914 and of his war service others will write. But it was that earnestness and devotion to duty and the fact that he never spared himself which brought on the illness that caused his death.

Thorough in everything he undertook, he was never known to speak ill of anyone. Worldly advantages were nothing to him and his only too short career was entirely devoted towards benefiting mankind. And to the many who grieve his loss, his friendship will be an abiding memory.

Correspondence.

AMŒBIC DYSENTERY IN NEW GUINEA.

SIR: As I understand there is some doubt in Australia as to whether amœbic dysentery exists in the mandated territory of New Guinea the following case may be of interest:

Mr. H.A., age twenty-nine, motor proprietor, had not been out of Australia until he came to the Territory in September, 1915, as a member of the Australian Naval and Military Expeditionary Force. He contracted malaria five weeks after arrival in Rabaul and has had several attacks since. He was sent to Nauru in March, 1917, and remained there till August, 1918, when he returned to Rabaul, where he has been stationed ever since. Whilst at Nauru he suffered from an attack of dysentery and was in hospital for a few days. He was not given emetine whilst in hospital.

He remained well until five weeks ago, when he had an attack of malaria which laid him up for a week. This was immediately followed by an attack of diarrhœa, with the passage of blood and slime. The attack lasted three days and was followed by further attacks, about five days intervening between. Tenesmus was marked in each attack; during this time he treated himself with port and brandy. On May 4 he reported sick and a specimen of fæces was examined by Mr. Weir, Assistant Bacteriologist, who reported free moving forms of *Entamœba histolytica*. On May 5 I saw the patient in conjunction with Dr. Honman, Principal Medical Officer; another specimen of fæces was examined and several amœbæ were found with ingested red blood corpuscles. Some fæces were submitted to Dr. Heydon, Commonwealth Bacteriologist, who confirmed the finding of *Entamœba histolytica*.

Emetine hydrochloride was given hypodermically and for the last four days (May 9, 10, 11 and 12) there has only been one motion in each twenty-four hours. The tenesmus has disappeared.

No free moving forms of *Entamœba histolytica* have been found since May 6, but cysts have been found daily, except on May 9.

The patient's weight on arrival in the Territory was about 13 stone; the present weight is 12 stone 12 pounds; highest weight, 14 stone.

Treatment is still being carried out.

I am indebted to the Principal Medical Officer, Dr. A. Honman, for his kind permission to publish this case, which is the first to be reported to the Health Department since the Civil Administration came into being.

In the medical report of German New Guinea for the year 1909-1910 there were 109 cases of *Entamœba histolytica* infections reported, the majority of which occurred in the months of April and December.

Yours, etc.,

N. B. WATCH, L.R.C.P., D.P.H., ETC.,
Medical Officer for the Territory of New Guinea.

Rabaul, May 16, 1922.

CRACKING OF THE SKIN OF THE THUMBS.

SIR: Can one of your readers help me to obviate a persistent, if minor, disability. I have "done time" professionally in Australia, Great Britain, South Africa, aboard ship, France and the Near East; I have visited Canada. Whether the atmosphere be hot or cold, so long as it is dry I suffer from deep cracks of the tips of both thumbs. They appear suddenly, are about one-eighth of an inch in length and end at the level of the nail's edge. They leave a marked cicatrix for at least six months, which as often as not breaks down again. I never use a mercurial antiseptic for my hands.

Experience shows me that a dry atmosphere is the predisposing cause, the exciting seems to be pressure, *e.g.*,

buttoning my clothes with the right hand the cracks appear on the ulnar side and conversely the radial when using the left thumb. A small thing, but mine own! Can anyone advise me?

Yours, etc.,
"PICKPOCKET."

[THE tendency of the skin to crack would appear to be due to a xerodermic condition. Although treatment is unavailing as far as the tendency is concerned, the cracks can be prevented and the skin kept in relatively good condition by the application to the hands after each washing of a cream composed of two parts of lanolin and two parts of olive oil emulsified in three parts of glycerine and three parts of lime water. The cream can be put up in a collapsible tube and carried in the pocket.—EDITOR.]

THE "PEUGEOT" QUADRILETTE.

SIR: I have been interested in this little car, but am dubious of its suitability to Australian roads. I should deem it a favour if any reader of THE MEDICAL JOURNAL OF AUSTRALIA who has experience of it, would be good enough to communicate with me or inform me through your columns as to what he thinks of the machine.

Yours, etc.,
W. P. BIRMINGHAM, M.D.

Fremantle, Western Australia,
May 17, 1922.

Books Received.

A STUDY OF INTESTINAL STASIS, by J. C. Watt, M.C., M.B., Ch.B., West African Medical Staff; 1922. London: John Bale, Sons & Danielsson, Limited; Demy 8vo., limp cover, pp. 23, with X-ray illustration. Price: 1s. net.

Medical Appointments.

DR. F. A. HADLEY (B.M.A.) has been appointed a member of the Nurses Registration Board of Western Australia.

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DR. C. F. MACDONALD (B.M.A.) has been appointed Public Vaccinator at Warracknabeal, Victoria.

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DR. R. W. TELFORD (B.M.A.) has been appointed a District Health Officer, on probation, in Victoria.

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DR. F. J. MCCARTHY (B.M.A.) has been appointed Government Medical Officer at Crookwell, New South Wales.

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DR. C. L. PAINE and DR. W. C. SWEET have been appointed by the Government of Queensland Health Officers for the purposes of *The Health Acts, 1900 to 1917*.

* * * *

DR. A. E. SHAW (B.M.A.) has been appointed Second Assistant Medical Superintendent, Hospital for the Insane, Goodna, Queensland.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

BEDFORD PARK SANATORIUM FOR CONSUMPTIVE SOLDIERS, SOUTH AUSTRALIA: Medical Officer.

INTERNATIONAL HEALTH BOARD: Two Travelling Fellowships in Public Health.

ISISFORD DISTRICT HOSPITAL (CENTRAL QUEENSLAND): Medical Officer.

STATE PUBLIC SERVICE COMMISSIONER'S DEPARTMENT, QUEENSLAND: Health Officer, Department of Public Health, Brisbane.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Societies Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Hampden District Hospital, Kuridala, North Queensland Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

JUNE 7.—Victorian Branch, B.M.A.: Branch.
JUNE 9.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 9.—Queensland Branch, B.M.A.: Council.
JUNE 9.—South Australian Branch, B.M.A.: Council.
JUNE 10.—Eastern District Medical Association, New South Wales.
JUNE 13.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 14.—Western Australian Branch, B.M.A.: Council.
JUNE 14.—Melbourne Pædiatric Society.
JUNE 15.—Victorian Branch, B.M.A.: Council.
JUNE 16.—Eastern Suburbs Medical Association, New South Wales.
JUNE 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 21.—Western Australian Branch, B.M.A.: Branch.
JUNE 21.—South Sydney Medical Association, New South Wales.
JUNE 22.—Brisbane Hospital for Sick Children: Clinical Meeting.
JUNE 23.—Queensland Branch, B.M.A.: Council.
JUNE 27.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.

Editorial Notices.

MANUSCRIPTS forwarded the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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